THE JOURNAL OF GAS LIGHTING
WATER SUPPLY & SANITARY IMPROVEMENT

VOL. LXXVI. No. 1944.] LONDON, AUGUST 14, 1900. [52ND YEAR. PRICE 6d.

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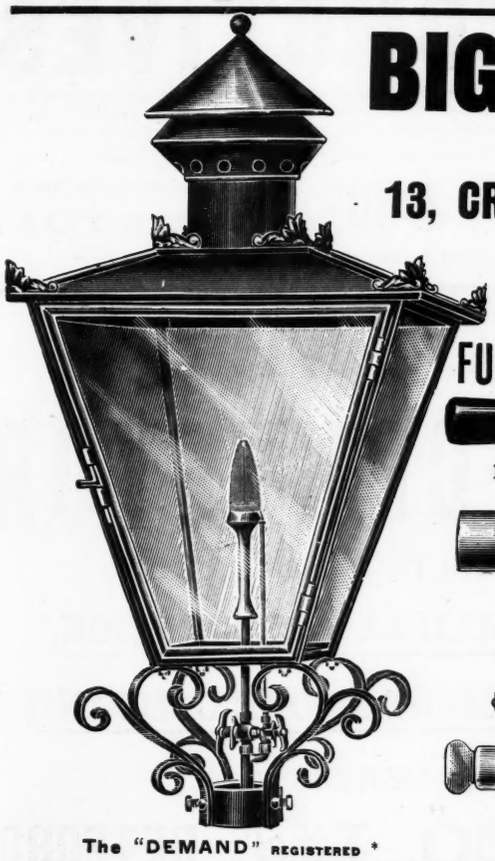
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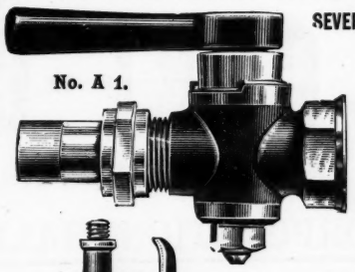
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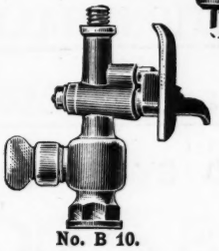
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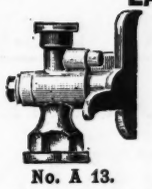
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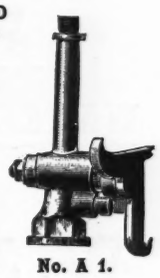
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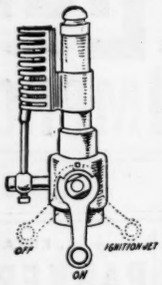

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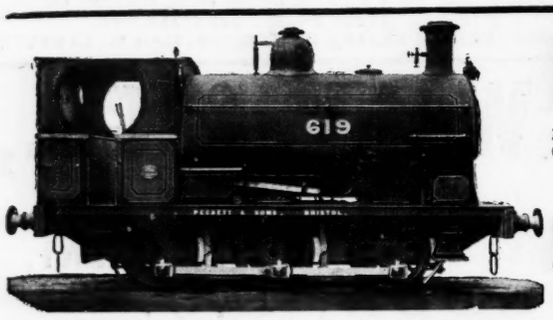

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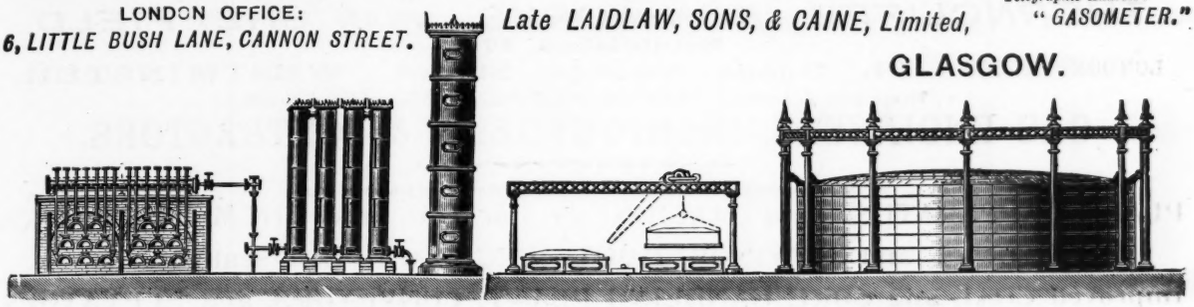

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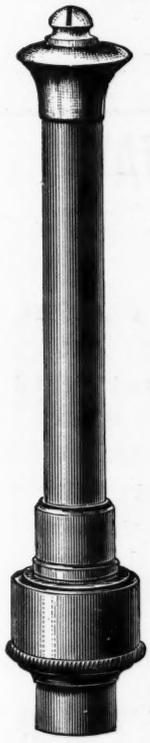

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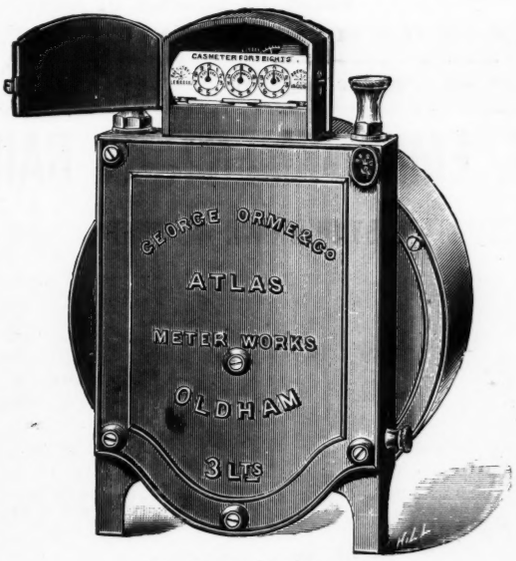

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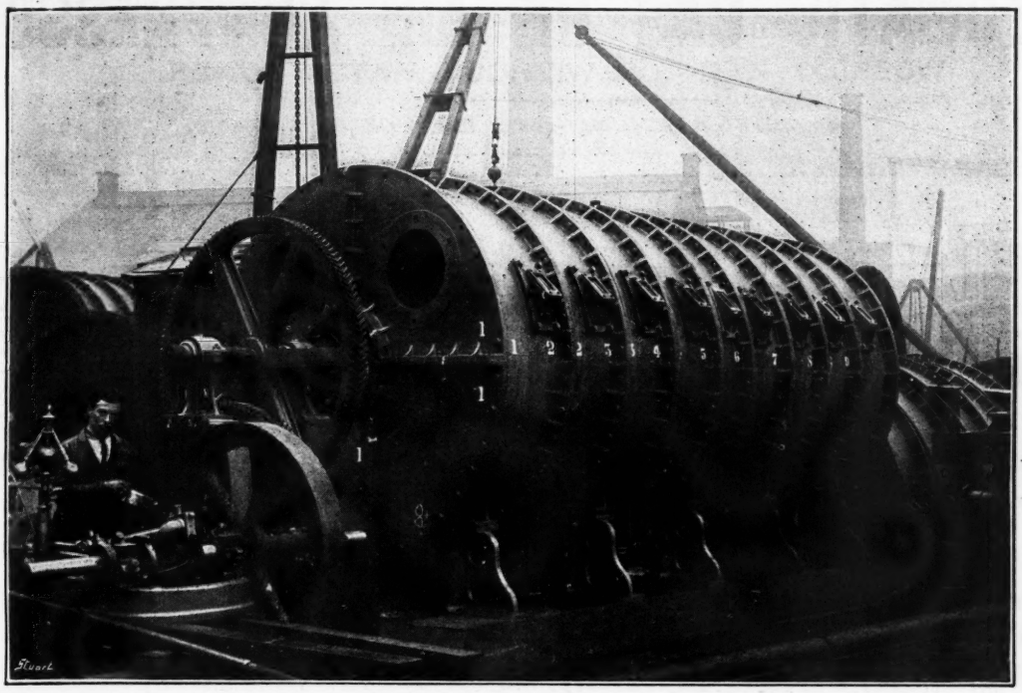

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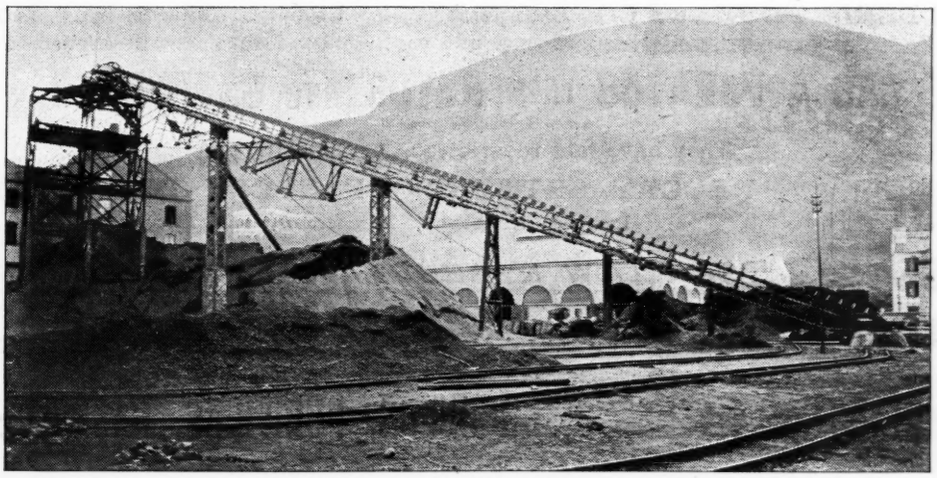

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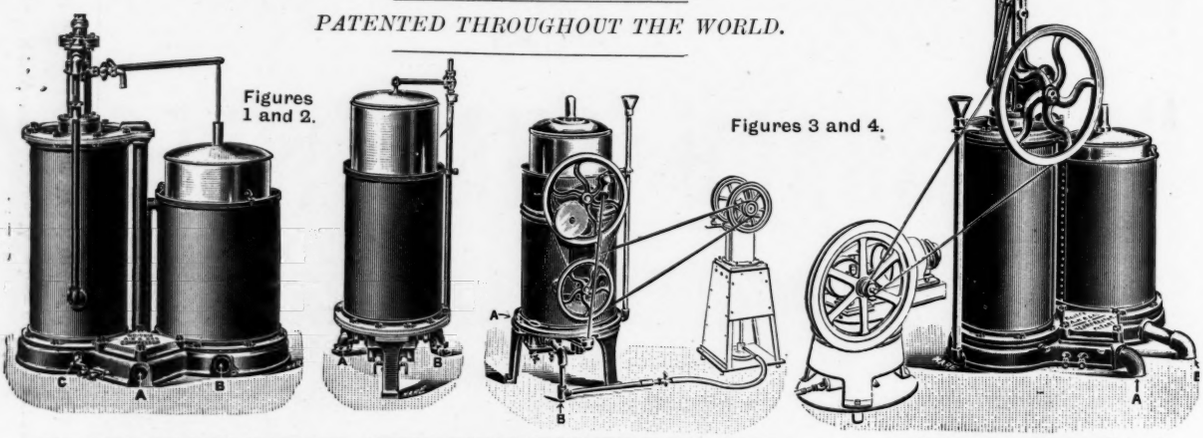

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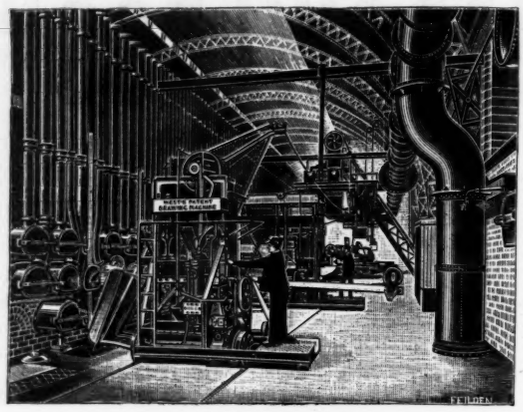

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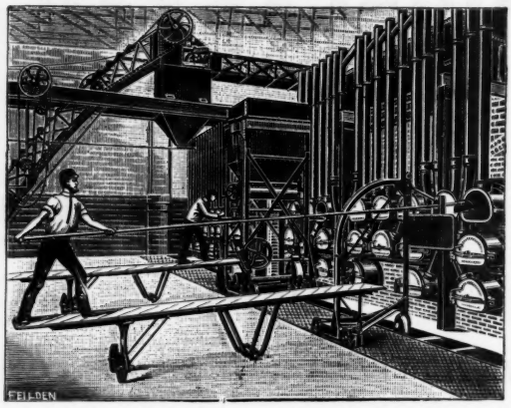

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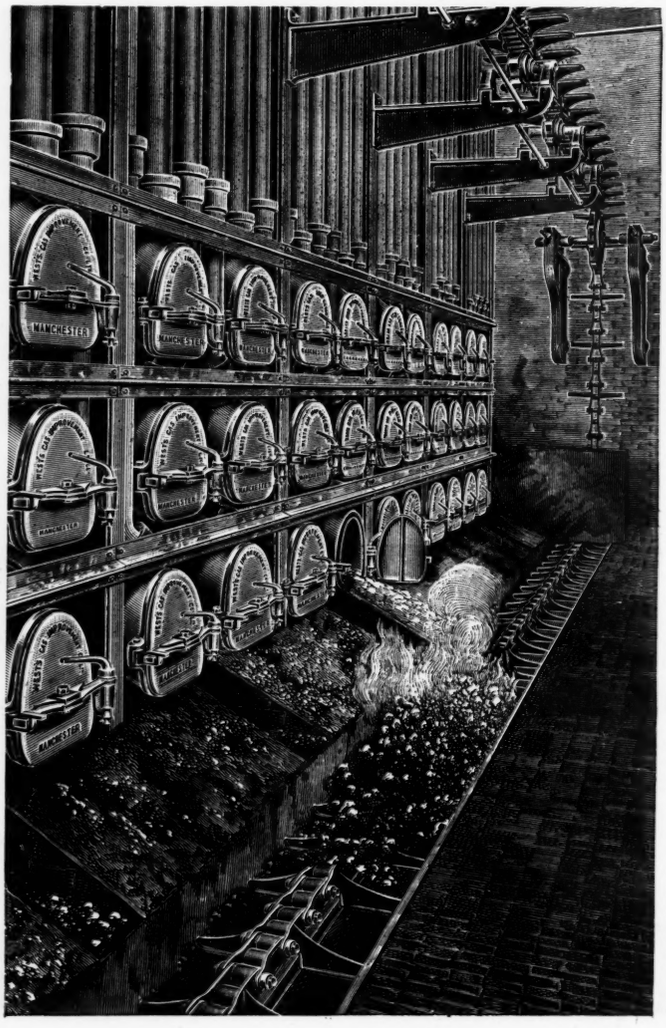

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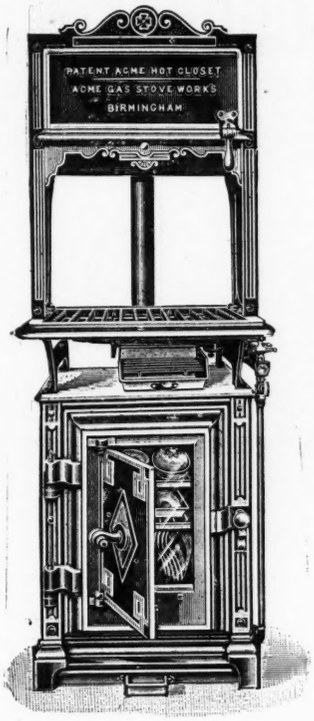

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which extract ALL the Ammonia and a large proportion of the CO_2 and H_2S.

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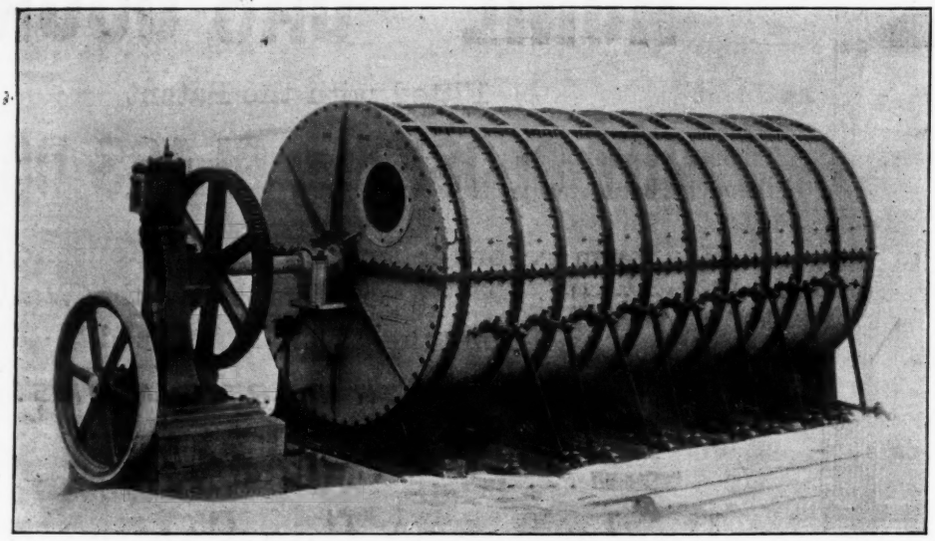

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Easy access to interior.

PHOTO. OF MACHINE (ONE OF TWO) RECENTLY ERECTED AT THE SALTLEY WORKS, BIRMINGHAM.

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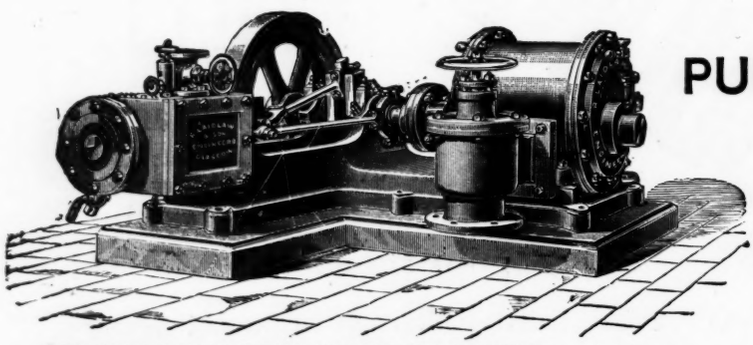

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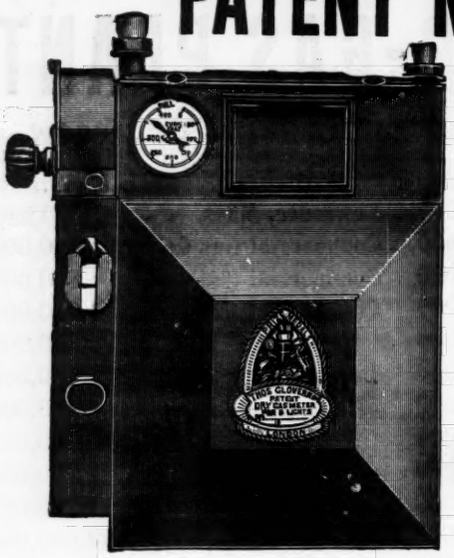

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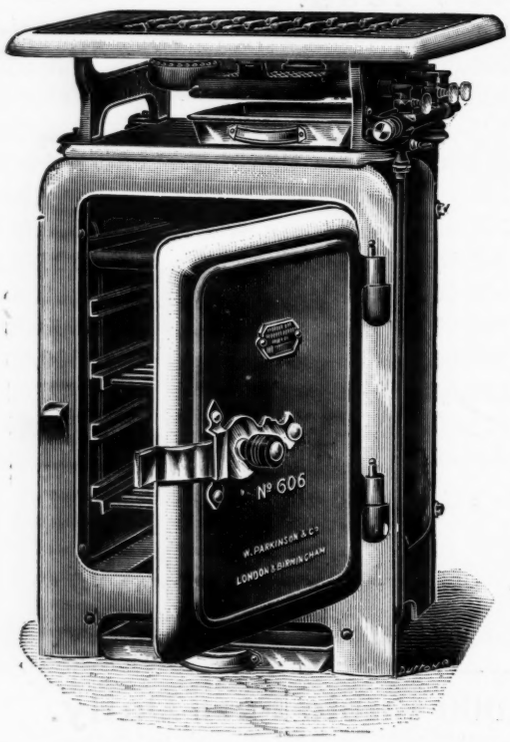

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No notice can be taken of anonymous communications. Whatever is intended for insertion must be authenticated by the name and address of the writer; not necessarily for publication, but as a proof of good faith.

EDITORIAL NOTES.

The Affairs of the South Metropolitan Company.

THE meeting of the South Metropolitan Gas Company on Wednesday last was signalized by the delivery of one of the longest and most informing addresses on the general London gas situation which even Mr. George Livesey has ever given to his old friends the South Metropolitan shareholders. It must have been noticed that of late Mr. Livesey has carried to the greatest possible length the policy he has deliberately adopted of taking the public into the confidence of the directorate of the most enterprising and expansive of London Gas Companies. He appears to have discovered, in the course of an unrivalled experience, that popular ignorance and distrust of gas companies' methods is one of the chief sources of the trouble, unnecessary expense, and downright persecution which such undertakings are commonly made to endure at the instance of local authorities. Accordingly, he has lately more than ever drawn upon the stores of his knowledge, and given free expression to his judgment on every opportunity that has offered itself for getting home to the perceptions of the intelligent public. Perhaps in due time the gas industry will reap the benefit of all this prodigality of expert testimony, and even the London County Council will be ashamed to vent such ineptitudes and meannesses as those vigorously scourged by Mr. Livesey on Wednesday. Even "the man in the street," one supposes, learns while he lives; and the London County Council are such faithful mirrors of the worst weaknesses of this much-quoted individual—they so thoroughly adopt his view that every kind of commercial dealing is a thinly-veiled robbery of the purchaser—that when he is brought to see that the term "gas shareholder" is not exactly synonymous with "thief and liar," they will instruct those who do their parliamentary work to oppose future Gas Companies' Bills on another general principle.

On the subject of gas coal prices, Mr. Livesey is persistently optimistic. He is firmly persuaded that the coalowners will not be able to keep up the present excessive prices much longer. On their side, it may well be supposed, antagonistic views prevail. It must be taken for granted that the colliery interests will do their very utmost to keep prices up; but all experience shows that this is, in the long run, a task beyond the power of any producers. Time and again there are seasons of inflated values for most commodities, for which no generally satisfactory reason can usually be assigned. Latterly it has been the turn of the coalowners to line their pockets; and much good may they derive therefrom. They may at least rest assured that next time they find themselves in a tight place, owing to falling values, labour troubles, or anything else of the kind, the public will not forget the fat years of the close of the century. It may be said with perfect truth that this time the coalowners have a strong ally in their own workpeople, who will be careful not to make stocks which would act in the sense of depressing values. But circumstances will probably prove too strong for even so unholy a combination to bleed the British public as that of colliery proprietor and Trade Union pitman. Again, if the pitman is proved to have a hand in this game, for the sake of the stakes, it will be remembered against him next time he sends round the hat. We do not believe that, with all the will to do so in the world, the coal trade can keep the bubble from bursting. The advance of value is altogether too much. A shilling or two per ton, which the outer world has so often been assured makes all the difference between penury and comfort to coalowners and workers, might have been defended on economical and industrial grounds; and nobody would have wondered at it. But when it comes to a jump of 8s. to 10s. per ton, one is forced to believe that the possibility of realizing such an advance must be due to accidental circumstances which were not organized by the trade, although it has known how to take advantage of them. That is really the view of the situation which Mr. Livesey advertises so plainly as his own.

It is unnecessary to paraphrase Mr. Livesey's observations on the working of the sliding-scale in the reverse way to that with which the public have hitherto been familiar. He admits that the machinery might be expected to creak a little, when started in the opposite direction; but here again he is a believer in the sovereign virtue of candour. A little explanation, he is assured, is competent to lubricate the movement; and he thinks the public are entitled to this

attention. They do not always get it. In regard to the South Metropolitan advance, the hardest case is undoubtedly that of the beneficiaries under the profit-sharing scheme, who lose the whole of their bonus. In the face of such a sacrifice, even the loud voice of County Council calumny is hushed. Nobody has ventured to suggest that the Directors have put up the price of gas wantonly—nobody, that is, except the professional gentleman who is the head of the technical college where they are supposed to teach "Gas "Manufacture;" but perhaps the exception is here apparent rather than real!

Mr. Livesey's references to the recent parliamentary experiences of the Company were sufficiently scathing. They were not too severe, as those who have followed the course of these proceedings will agree. Opposition to a proposal for legislation on the merits can be understood and appreciated. It is natural, and even desirable from the point of view of the promoters; because in the light of criticism defects appear which can be rectified. Rancorous opposition, however, supported by imputations and innuendoes such as those which galled Mr. Livesey on the occasion in question, is always an unworthy performance, whoever stoops to it. It cannot be wondered at that after all this year's experience—which embraced, be it remembered, some stiff fighting over certain Tramway Bills of the County Council—the South Metropolitan Company, by the voice of the Chairman, should claim to be treated *primâ facie* not as thieves and vagabonds, but as honest and well-intentioned men. It is satisfactory to notice that Mr. Livesey dealt adequately with the recent imperfect statement of the Comptroller of the London County Council as to the rate of interest received by shareholders in the London Gas Companies. This statement required such a commentary as it has now received; and possibly this clearing up of the matter will suffice. Mr. Haward not only omitted to take account of transfers of stock at the market value, but he also ran up against the "increased increment" itself which has rewarded the fidelity of those who stuck to gas property when it was not in the repute it enjoys to-day.

The Way of Progress.

We have received some expressions of appreciation of our last week's article insisting on the necessity for gas directors to bestir themselves in the sense of pushing the trade in gas. Gratifying as such communications must naturally be to ourselves, we should grieve at the prospect of their remaining no more than empty compliments. The best proof of our readers' agreement with the "forward policy" persistently advocated in these columns would be the production of patent evidence that they were acting upon our advice. It is for this reason that we have addressed our appeal to Directors in the first place, and principally; because unless the Board of a gas company realize their responsibility as the heads of a commercial concern, the manager can do very little outside his works. The curse of the joint-stock company system, statutory or otherwise, is guinea-piggery in the Board-room. In the case of British Gas Companies, the measure of statutory protection they enjoy has fostered the spirit of automaticity, to coin a word, in the administration, which is highly detrimental to commercial efficiency. One eminent exponent of this quality of gas administration flatters himself that he has exactly defined the position of the gas undertaking with which he is connected in calling it a "*quasi* Department of State." We have all heard and applauded of late the declaration of a prominent statesman that the chief need of the British Empire is reorganization upon a business footing. So, let us say after him, the necessity of the hour for British gas undertakings is the getting rid of this wooden style of government, this contentment to follow on the lines of a Department of State, or even of a Municipal Corporation, and the adoption of a determination to run the business upon business lines.

The early statutory association of gas with water supply doubtless encouraged this idea of automatic administration as being equally appropriate to both. The practice of pushing trade is obviously inapplicable to the case of a water company. Not that there is no room in a water undertaking for intelligent and enterprising administration. On the contrary, there is plenty of scope for administrative talent of a very high order in a water undertaking; but the staple commodity of the business is not subject to the laws of ordinary trade. While gas and water supply offer many parallels, they differ fundamentally in this respect, that while one can be replaced by something else, the other is a prime necessary of life. Nevertheless, we find in far too many instances a gas undertaking administered without any apparent recognition of the difference between the nature of the demand for gas as compared with the need for water. People are supposed to consume gas because they cannot help it. Nothing is done to encourage gas consumption; much to repress it. Public opinion is treated as a negligible quantity. Gas chairmen "do not hesitate," as they say, to put up the price of gas to any figure they think necessary, without deigning to acquaint the public with the reasons for an increase. In very few undertakings is original enterprise fostered or suitably rewarded. Boards of directors follow one another, at irregular intervals, like a flock of sheep, in adopting such revolutionary methods of increasing gas consumption as establishing a hiring-out department for kitcheners and stoves, or adopting prepayment meters; but they usually strike the public as more anxious to do as little as they dare than as much as they can in the interest of the community they are privileged to serve. This is the spirit, and the reputation, that we are always working to exorcise and remove.

Gas companies must be prepared to do more for their public than they ever did in the past; and gas directors should consider their position accordingly as being analogous to a seat on the board of a brewery or a cash "stores." The keenest and most cutting businesses can be, and are, conducted by boards of directors; and these might be the training schools for modern gas administrators, rather than any Government circumlocution office, filled with Tapers and Tadpoles. Gas companies do not need any more lessons in the art of "how not to do it." There is so little difficulty in the business at bottom, that a director habituated to the work of carving out dividends from the midst of a crush of competitors (say) in the "coffee-roll-and-butter" trade, would smile at what passes for enterprise in a statutory gas undertaking.

Only, it is necessary to repeat, it will be neither right nor reasonable to shift upon the manager the responsibility for actually doing all aggressive work. If the manager is capable of doing it, and is paid accordingly, there is nothing to be said against his having the additional work; but certainly not otherwise. What interest can the engineer and manager ordinarily have in taking upon himself the burden of an additional department which was "not in the bond" of his engagement? Many a man so situated would say, justly, "I should not even get thanks for it; and if anything "turned out unsatisfactory, or I was outside when I should "have been at the works, I should never hear the last of it." *Verb. sap.!* Even gas managers are but human. But at the same time, where a new department of distribution is created, it is essential that this should be under the superior control of the engineer and manager—not to interfere with, but to see that it does not give rise to any conflict of interests. The policy of every department of a gas undertaking should be settled by the engineer and manager in consultation with the Board, and nothing should be done behind his back. This rule sounds simple and obvious enough; but unhappily it is not infrequently broken in the most highly-organized concerns.

Lastly, we have received a suggestion from an esteemed correspondent and friend of long standing, which deserves mention in this connection. He alludes to the trade organizations which cover the country, and asks why gas managers do not have something of the kind for themselves. The members of these trade associations meet in private, as well as (some of them) publicly, for the discussion of matters of common interest. Perhaps one reason why District Associations of Gas Managers fail to keep up their attractiveness to the mass of members might be found in the circumstance of everything except the Committee work, which is usually trivial, being done in public. Yet members of these Associations who have served on the Committees freely confess that they have been amply repaid by the friendships found and the help received in the privacy of these gatherings, ostensibly held for other purposes. Well, now, when the union of the national technical societies is consummated, it will be quite feasible to convert the existing District Associations into District Committees, or to appoint all the members residing in certain areas *ipso facto* committeemen for that district. The meetings of these Committees might be either public or private, at will; and, in the latter case, all those vital points of gas administration and management which it is not expedient to bruit abroad might be considered freely and fully. As our correspondent remarks

in his letter, "At present we tell the public everything, and "there is no unanimity amongst us." The accounts of gas undertakings are published; and this ought to suffice. It is not as if gas managers could form themselves into "rings" with objects inimical to the interests of the public. They have no temptation to do anything of the kind. But a technical committee, meeting without reporters, might prove a very useful institution. We should like to hear other readers of the "JOURNAL" on the suggestion. Even the much-vilified circular of inquiry is at bottom a witness to the need for something of the kind.

Mr. Livesey and Others on the Coal Outlook.

THE robust optimism as to the nearness of an easing of the coal market with which Mr. Livesey has taken more than one recent opportunity of endeavouring to reassure the gas consumer and coalowner, is, it is to be observed, shared by more than one other competent authority. The Midland Railway Company, as was noted in these columns some while since, have adopted a course similar to that followed by the South Metropolitan Gas Company—namely, that of making shorter contracts for coal than usual, and trusting to buy their further requirements at a lower price. The latter Company, as is well known, only entered into six months' contracts from the end of March last, instead of the usual purchases of a year's supplies. The Midland Company, Sir Ernest Paget informed the shareholders last Friday, who, in the ordinary course, enter into yearly contracts on the 1st of July for about 100,000 tons, decided this year to only contract for four months' requirements from that date. So far, then, as both Companies are concerned, the cards are on the table; the most pessimistic thing that could be said of their chances in the game at the present moment being that they will not do any worse at the end of September than they would have done three or six months earlier. We, however, think the chances of their doing better can be put higher.

The facts adduced by Mr. Livesey as to the way in which the coal bought by his Company for delivery during the summer months had, contrary to expectation, been sent in sharp to the stipulated date, certainly justify his deduction therefrom that the supply has not fallen short of the demand to anything like the extent that the coalowners and merchants would like the public to believe. It is indeed remarkable that the South Metropolitan Company should have 32,000 tons more of coal in stock at the end of June than their neighbours north of the Thames, whose stock, be it said, was then well up to the normal. The former Company's store of 162,000 tons is, we estimate, equal to five maximum winter weeks' requirements.

While, therefore, the organs of the coal and allied trades report weekly continued activity in the coal market and prosperity of the coalowners and dealers, signs are not wanting that the price-curve which has so persistently moved upward since last autumn will soon begin its return course towards the normal level. Mr. Livesey referred the other day to one of those signs—namely, the falling off in the export of iron and of goods manufactured therefrom. Since then the Board of Trade returns for July have been published, and show further and equally striking decreases in those exports. The total weight of iron and steel goods shipped to other countries during the month was 267,143 tons, which compares with 370,014 tons in July, 1899, and is actually less than the exports—281,194 tons—in the same month of 1898. Further, the total value of steam-engines and machinery other than steam-engines sent abroad was, even at the present higher prices, less than last year by £164,292, or 9 per cent., and £12,742 below the corresponding figure in 1898; while the ships sold to other countries were of less value than in 1899 by 16 per cent. Again, turning from the trades that indirectly affect the coal market to the actual exports of coal, we find there also a falling off in the shipments, which though small it is gratifying to note. The total quantity of fuel exported in July was 3,981,021 tons, and the coal shipped for the use of steamers engaged in foreign trade equalled 979,097 tons. The corresponding figures for last year were 3,993,942 and 1,029,360 tons respectively; the aggregate in 1900 being 1¼ per cent. less than in 1899. A further man "in the know" who does not join the chorus of the "coal at 50 shillings" party, is Councillor Johnson, the Warwickshire miners' agent. If only people, he says, would wait till October before buying their winter stock of coal, they need fear no further rise in price. However, led by an ignorant but talkative Press, the public have taken a different course; and so we read that "it is "said that the demand for house coal at this time of the "year has never been so active since 1872." We will see what the same report says in two months' time.

A Fortunate Gas Company, and their Duty to the Consumers.

IT is not an infrequent occurrence that a man finds himself in a situation in which he has to determine which of two courses he shall pursue. In his own mind, he can find arguments both for and against each. He sees some uncertainty in both, knowing that either may in the future, by a turn of events, prove to be wrong. Anyway, he has to decide, and can only trust that he has selected aright. Trading companies are not exempt from this experience of the individual; and, although it is said that there is "safety "in numbers," even a Board of Directors, however good and prudent they may be, are not infallible. But there are times when two courses present themselves in connection with a question, and give little anxiety—the right one being palpable. The Directors of the Brentford Gas Company were recently in that happy position in respect of the price of gas; and, it seems to us, they chose the obviously correct course. The Company, as things now go, are in a fortunate and enviable condition. They have a coal contract running, at an advance of only 3s. 7d. per ton on the previous price, which will carry them on to this time next year; the profits of the past six months have enabled them to pay their usual dividend, and carry £6000 to the undivided balance; and the Directors can see sufficiently far ahead to predict, with almost absolute certainty, that the profits of the twelve months ending Christmas (at the present price of 2s. 11d. for gas) will suffice for the year's dividend. In addition to this, they have a substantial amount of undivided profit. This was the position in which the Directors found themselves when they had to consider which of two courses they should take in regard to the price of gas. All around them they saw their neighbours were advancing their charges; and the questions for them to choose between were: "Shall we "do the same, or shall we, as we can afford to do, continue "selling gas at the existing figure, although the time may "come when we shall have to pay more for our coal?" But the present outlook gives promise that that time may not be yet. The Board determined not to raise the price.

In this directorate runs a strong vein of the Court of the Gaslight and Coke Company; and therefore their resolution on this question is all the more refreshing. At the meeting of the shareholders last Friday, the Chairman, Mr. Howard Charles Ward (who is the Deputy-Governor of the larger Company) announced the reason for the decision of the Board in a pithy and admirable sentence: "With such a "prospect before us," he said, "we considered it would be "*unjust to the consumers* to raise the price of gas." And we agree with him, and think most gas administrators will do the same. But, as our report shows, Mr. H. D. Ellis (whose ability as a financier is well known, and has been frequently acknowledged by the Board of the Commercial Gas Company, of which he is Secretary) disagreed with the Brentford Directors' policy on this point. He considered it was inadvisable not to raise the price when everybody else is doing so; and he tried, in a gentle way, to persuade the Directors to alter their decision by drawing a picture of the odium they would bring upon themselves, and the brunt of which they would have to bear alone, if, by force of circumstances, they had to increase the price later on, while at the present time, in the general movement, a rise would not attract particular attention. There is some truth in this; but there is also a trace of weakness about it which would be unworthy of a strong Board in the felicitous position of the Brentford Directors. If, happily, the necessity does not arise for advancing the price, we venture to think that the revenue of the Company will show the wisdom of the Directors' policy. But if, unfortunately, an increase should prove inevitable, the bulk of the consumers, we believe, will recognize that the Company have not been unmindful of the interests of those whom they supply, and have dealt with them wisely and well.

Mr. Ellis tendered his advice with the best of intentions; but in doing so in public meeting, he has simply put a seal on the Board's policy which cannot be broken until such time (which we hope will not come) as the Directors find they cannot continue to supply gas at the current rate. After the Chairman's statement, and after the publication of Mr. Ellis's remarks, what a howl of indignation there would

be if the Directors now turned right-about-face. Counsel such as this, affecting as it does the consumers' pockets, is better given in private than at a public meeting. Even the Chairman and Directors of the Brentford Company would hardly care to face the torrent of abuse which would flow if they were now to adopt Mr. Ellis's advice, well meant though it was.

The Parliamentary Session.

THE session of Parliament which came to an end on Wednesday last will not greatly occupy the attention of the historian. Its debates and proceedings were—with scarcely an exception—as dull and uninteresting to "the man in the "street" as events occupying the public mind throughout its duration were stirring and engrossing. This—with the attention both of the Government and the nation so preoccupied with foreign affairs—was perhaps inevitable; for the legislative proposals of the Front Bench were necessarily of only a second or lower order of importance. The chaotic condition of party politics, and the impending dissolution, further contributed to the unwonted stagnation of parliamentary life.

The legislative record of the session (we are, of course, now speaking only of the public, not of private legislation), while not containing any measure of really first importance, except the Australian Commonwealth Act, comprises one or two enactments of interest to the commercial and industrial worlds. First among these must be placed the Limited Liability Companies Act, which, though not heroic in its provisions, is a considerable step in the direction of the much-needed reform of the Companies Acts. It is a matter of regret that the Government deemed it expedient, in order to facilitate the passing of the Bill, to delete some of the most important of the original clauses, from the investor's point of view. As the Bill was drawn, it contained a provision that the prospectus of a company should disclose "the dates of, and parties to, every material contract;" and that "a seasonable time and place at which any material "contract or a copy thereof" might be inspected should be therein nominated. These provisions, as well as others relating to the disclosure in the prospectus of material particulars concerning the promotion and flotation of a company, have been dropped. But, even in its watered-down form, the Act contains some useful amendments of the previously existing law, not the least important of which is the provision that the annual return made to Somerset House shall differentiate between shares issued for cash and those issued otherwise than for cash. It is further satisfactory that the new law will tend to strengthen the hands of auditors; it being provided that their report shall be read at the general meeting of shareholders. When all is said, however, it cannot be urged that the Act of 1900 will render the way of transgressors of the moral laws, who wish to avoid offences against the law of the land, much harder than before. We must nevertheless be thankful that something has been done to render it less easy.

The Railway Accidents Bill, placing on the companies the obligation to provide methods of coupling designed to reduce the danger of that operation to a minimum, only affects such Gas Companies as own rolling stock; and of those, the Gaslight and Coke Company (who have a fairly extensive railway system running through the Beckton works) are the only considerable instance. The Housing of the Working Classes Act (in amendment of the Act of 1890) gives power to local authorities to erect or acquire houses for the prescribed purposes outside the area of their own jurisdiction, and improves somewhat the procedure under the existing law in rural districts. It does not pretend to be more than a small and cautious step towards the settlement of the wide problem comprehensively known as the Housing Question. As we said upon the opening of Parliament last January, it is better that so large and so difficult a problem should be left standing over until less strenuous times (so far as foreign affairs are concerned), than that it should be dealt with in an ill-considered and perfunctory manner in a listless session. The proposal to enable local authorities to render greater aid to institutions designed to provide Secondary and Technical Education, and the Bill to amend the Factory Acts, were among the measures that were introduced by the Government, but were subsequently dropped through lack of time for their successful prosecution. Among the crowd of Private Members' Bills brought in (most of them for show, not use) were several for the extension of the Workmen's Compensation Act to agricultural labourers—there being not unnaturally a rivalry for the credit of that extension—and one of these Bills was successfully steered into the desired haven of the statute-book.

No other enactment or proposal made during the session calls for any special mention here; the financial expedients to which the Chancellor of the Exchequer resorted for the provision of the extraordinary expenditure necessitated by the war (which, like King Charles, is an unconscionable while a-dying) being only too painfully brought home to the income-tax payer at the time when his dividends are about to be, or have been, received. Much may happen between the reading of the Queen's Speech which closed what Sir Michael Hicks-Beach called the dullest and least interesting session he ever remembered, and of that which will open the next sitting of the House of Commons. So far as the gas industry is concerned, the session of 1901 cannot fail to be full of interest, and to see events of the first importance. It is not from that standpoint that the session of 1900 can be described as dull and uneventful.

Re-Starting of Strike Factories.

REPORTS from different parts of the country give clear warning that the present era of brisk trade has encouraged the moving spirits in the various Trade Unions connected with the rougher callings, and with unskilled labour, to agitate for all sorts of things, including "recognition of "the Union." The case of the Great Eastern Railway Company is typical. Employers remain in blissful ignorance of anything being wrong with their workpeople, till some fine morning a strange gentleman appears on the scene, announces himself as the "General Secretary of "the Amalgamated Wait-a-Bits," and declares himself to be in possession of a "mandate" from the firm's employees to require certain concessions, on pain of a strike. Then the same weary old round begins. First the Society claim to have started it; then they deny their complicity, and say they only took the demand up after the men in the factory had determined to act. "Interviews" between employers and employed, which could have been arranged at any time, become points of much acrimonious contention because outsiders want to be present. Of course, if employers are wise and strong, they resist this kind of interference in their affairs to the uttermost. Where they mean business, and take counsel with the Federation, their ultimate triumph is certain. But in some cases the employer weakly buys up his enemies for the sake of present peace; and the result is that he has an Old Man of the Sea on his shoulders for ever after. The strike of 1889 cost the South Metropolitan Gas Company a lot of money; but the other Companies who fell under the domination of the Union have paid considerably more than they, and yet are not free.

More London Lamp-Posts.

AFTER all that has been written and said about the obstinate Philistinism that condemns the streets of our chief towns to such depths of unmerited and superfluous ugliness, in respect of those accessories like the lamp-posts, which provide almost the only openings that exist for the display of a little of the power of Art to redeem the aspect of common things from uttermost condemnation, it is very saddening to read the report of the Highways Committee of the London County Council on the supply of lamp standards for the Victoria Embankment and for Westminster Bridge. This report refers to a part of the job of electric lighting for these great thoroughfares, which the County Council have had in hand for goodness knows how many years. It is now coming to something like a head. It is unnecessary to do more than allude in passing to the place of Westminster Bridge and the Embankment in the picturesque aspect of the greatest city of the world and of all time. From Wordsworth, whose sublime sonnet first revealed the supreme charm of the prospect from the former, to the pilgrims from all lands who come to survey and to saunter along the latter, there is a universal agreement that earth has nothing more impressive and beautiful to show than this magnificent reach of the Thames. Yet the London County Council will not be happy until they have spoilt it. They have shown what they are capable of in the arc lamp-sticks—they are not worth calling lamp-posts—with which they have insulted Waterloo Bridge. The design of these must have been suggested by some caretaker of Spring Gardens; for they are like nothing so much as a broom set up on end, all head and no body.

Now they are bent on treating the other bridge, and the Embankment, differently. Variety is charming. So the Highways Committee advertised for tenders for the supply of the next lot of arc lamp-posts, at an approximate price of about £30 apiece. We say nothing about the price; but consider the system! Everybody in the castings trade was invited to submit his own "design;" and, in the event, two "designs" submitted by one "firm" were approved of as being the most satisfactory. In order to improve upon the best, however, the "firm" were asked to submit a further design "embodying what we considered to "be the best points of each of those submitted with their "tender." This is, of course, the way that Michel Angelos and Cellinis are made—and encouraged. It is very sad, but what better could be hoped for? There is this grain of consolation in the tale, that neither the Waterloo Bridge abominations nor the outrageous vagaries admired of the St. Martin's Vestry were regarded as worthy of reproduction. The new fancy of the County Council can hardly be worse than these. When the Council tramcars heave their crude profiles into the sky-line across the bridge, and rattle along between the plane tree avenues bordering the river, the picture from Westminster Bridge or from Waterloo Bridge—new style—will be perfect. Who will be bold enough to say after this that civilization does not progress?

WATER AND SANITARY AFFAIRS.

Outside the Metropolis, the session which came to a close last Wednesday was not marked by any very remarkable topic in connection with water supply. The attempt of the London County Council to obtain legislative sanction for their purchase and Welsh schemes was once more frustrated by the rejection of the former and the subsequent withdrawal of the latter proposal—only, however, it may well be supposed, to be revived next year. As far as the London Companies are concerned, their combined action with the view of having conferred upon the Local Government Board further authority in the direction of requiring them to provide additional storage reservoirs, was nullified on a point of procedure. But the East London and Lambeth Companies each succeeded in obtaining power to extend their works in this particular, and to draw an additional quantity of water from the Thames. Both Companies encountered opposition, though not of a very formidable character. Its effect was, however, to put upon them certain conditions, which they will probably not find to be very onerous. At all events, it was better for the Companies to take the Bills under these conditions than to lose a session. In the Provinces extensions were authorized at Bristol, St. Albans, Rickmansworth, and Great Berkhampstead, as well as by the Mid Kent Company; and arrangements were completed for the transfer of the undertakings of the Exmouth, Spalding, and Hemel Hempstead Water Companies to the Local Authorities of the towns. The principle of the combination of such bodies for the control of the water supply of their area was once more recognized by the passing of the Bury Water Board Bill; though it was not considered to be applicable in the case of South Essex, the District Councils of which were desirous of being associated for the purpose named. The Lea Conservancy Board obtained an Act sanctioning their reconstitution. Two noteworthy incidents in regard to the legislation of the past session arose in connection with the Westgate and Birchington and Spalding Water Bills. The former, though strongly opposed in the Upper House, and threatened with equally serious opposition in the Commons, actually went through without a verbal alteration. The latter was jeopardized on a question of compensation claimed by two of the officers—the Engineer and the Collector—who had not been provided for in the Bill; but in one case the claim was withdrawn, and in the other it was satisfied. This matter actually gave rise to a debate in the House of Commons. Mr. Cornwallis, the member for Maidstone, reintroduced his Water Supply Bill of the previous session, but was unable to carry it forward.

The revolt of the water consumers at Guiseley against the increased charges of the Water Company, to which reference was made in a paragraph in the "Journal" last week, furnishes another example of the trouble likely to arise from making the price of a commodity in one town depend upon what is charged for it in another, regardless of local circumstances. Guiseley is supplied by a Company started about forty years ago; and for some time the service was adequate. But with the growth of the town came the necessity for a larger supply of water than they could furnish; and arrangements were consequently made for obtaining it from their neighbours at Yeadon, on what were regarded as satisfactory terms. The auxiliary supply was given by the Yeadon Company conditionally on the water being sold at the price charged by them in their own district. By virtue of this condition, the Guiseley Company were compelled in the spring of the year to alter their charges in accordance with those prevailing in Yeadon, although they were making a fair profit under the old conditions. The announcement of the change excited the District Council; but they could not do anything in face of the agreement. The new scale accordingly came into force, and things went on very smoothly until the bills were sent in. Where the revised charges resulted in a reduction, as it is stated to have done in the case of some 300 houses occupied by working-class people, no objection was raised. But where there was an increase, the change, as might well be expected, was received in a very different spirit. Some of the consumers have absolutely refused to pay on the revised scale, which in many cases is twice as high as the old one; and as the Company do not appear to have any statutory powers to recover debts, they have simply cut off the supply to those who decline to pay for it. The carrying out of these operations has been attended with considerable difficulty; the Company's servants being in some cases drenched with their own water from a hose-pipe. One locality having been entirely deprived of a supply, the District Council and the Medical Officer of Health were so indignant that the members of the Council are reported to have proceeded in a body to the spot where the tap was fixed, and deliberately restored the service. On the water question, Guiseley has, in fact, become a battle-ground for the Local Authority, the consumers, and the Company; and the progress of the contest is being watched with interest, not to say amusement.

As will be seen by our "Legal Intelligence," the liberal interpretation put by the Tendring Hundred Water Company upon the clause in their Act of 1884 authorizing them to supply water in bulk within their district, has not only led them into trouble with the Corporation of Harwich, but evoked a rebuke from two of Her Majesty's Judges. The circumstances which have led to this result can be explained in a few words. Eight years ago the Company were ordered by the Local Government Board, at the instance of the Corporation, to provide a supply of water constantly laid on under pressure within the limits of the borough. The Corporation, speaking on behalf of the inhabitants, complain that this order has not been carried out, for the reason that the water which should be available for domestic purposes is sold in bulk. They do not for a moment deny the right of the Water Company to sell their commodity in this way; but they urge that it should be subject to the condition expressly laid down in the above-named Act—that the domestic supply is not prejudiced. The Company reply that if there is a shortage of water in Harwich it is due to defective fittings and connections; while as to pressure, they put on as much as the pipes will stand. Complaints addressed to the Company not having resulted in improvement, the Corporation recently applied for, and obtained, a rule *nisi*, commanding them to carry out the order of the Local Government Board; and on Tuesday last the Company endeavoured to show Justices Day and Darling why the rule should not be made absolute. We think the arguments adduced were singularly weak. It was submitted that the Corporation had other remedies for their complaints than a *mandamus*—that they could apply for an injunction to restrain the sale of water in bulk, or proceed under section 36 of the Water-Works Clauses Act, 1847, which provides for the imposition of a penalty for neglecting to supply water for domestic use. It was further submitted that, in the event of the Company's supply being insufficient, the Corporation could themselves, under the provisions of the Public Health Act, 1875, provide one. Their Lordships were not impressed by the arguments adduced; and they came to the conclusion that the remedies suggested would not afford any real redress to the parties aggrieved, and that the issue of a *mandamus* was the only adequate remedy in the circumstances.

ESSAYS, COMMENTARIES, AND REVIEWS.

GAS AND WATER COMPANIES IN THE STOCK MARKET.

(For Stock and Share List, see p. 429.)

We are now in mid-August, which is perhaps the slackest period of the year for the Stock Exchange, and this, coming after a long-continued stagnation of the markets, has brought business down to about the lowest level it has touched for many a year. News from what we must now call the two seats of war have had but the slightest influence. Prices have not moved much, simply because there was nothing to move them; and there were about as many changes in one direction as the other. The Money Market has been more interesting, especially in connection with the late issue of Exchequer Bonds, the mode of action in regard to which appears to be a grave blunder which will one day be felt. If American allottees can realize here at a small premium, there will not be much gold to come across the Atlantic. Rates are holding on very firm; but how things are going to shape in the future is not quite clear. Business in the Gas Market was decidedly disappointing. When the Exchange reopened on Tuesday, there was a little stirring, and there really seemed to be some prospect of the market rousing from its lethargy. But the slight puff of activity fell away to a dead calm; and on the closing day not one single transaction was marked. Prices, of course, have moved but little; and they were irregular too. As more and more Gas Companies' accounts come out, so more complete is the evidence that the last half year has been a good one. But it must not be forgotten that the full pinch of the coal prices will be felt in the half year now current. Dealings in Gaslight ordinary were at good, steady middle figures; but the debenture stock was set back a couple of points. Only two or three bargains were marked in South Metropolitan; but it changed hands at top price. Commercials were steady at middle prices. A few changes took place among the Suburban and Provincial group; Alliance gaining and Brighton losing. The Continental Companies were noticeable for a recovery in Union. A few changes occurred among the remoter undertakings as noted below. The Water Companies exhibited their usual calm; only a few irregular movements taking place.

Operations were too few to follow; but the daily changes were: On Tuesday, Continental Union rose 2. In Water, East London debenture gained 1. On Wednesday, Union moved up 2, but Gaslight debenture fell 2, and Oriental new ¼. On Thursday, Union rose 1. On Friday, Brighton "A" receded 2½. In Water debentures, Lambeth fell 1½, and West Middlesex 5. On Saturday, Alliance gained ½; but Cape Town was set back ½.

MR. BALFOUR ON THE CONSERVATION OF ENERGY.

Those who are philosophically minded always rejoice with Mr. Balfour when he escapes from the domain of party politics and the routine and stress of the House of Commons—the rough-and-tumble of which is so obviously not congenial to his temperament—into the calmer regions of science, philosophy, or letters. Such an excursion he made in his recent Inaugural Address to the summer meeting of University Extension students at Cambridge, an extract from which was printed in the "Journal" for last week. Mr. Balfour took, or had prescribed, as his subject the very comprehensive theme of "The Nineteenth Century." This not being a journal devoted to the discussion of literary or metaphysical subjects—by the way, was it not Lord Justice Bowen who spoke of the study of metaphysics as comparable to a blind man groping in a dark room for a black cat that was not there?—but rather to matters of practical importance germane to the interests of the industries it claims to represent, we are not here concerned with the questions of the respective literary, artistic, or theological attractions of the different centuries so entertainingly discoursed upon by Mr. Balfour. It does, however, fall within our province to discuss that portion of his address in which he referred to the remarkable industrial developments witnessed during the dying century—developments due so largely to the "fruitful union between science and invention."

Few will be found to dispute the judgment that the characteristic note of the century is to be found in the growth of science: "The cumulative products of scientific research, to which no other period offers a precedent or a parallel." It is, moreover, especially characteristic of our own times that there is not only an immense addition constantly being made to the sum of our knowledge, but an ever-growing tendency to apply our theoretic knowledge to practical purposes. The enormous strides taken in recent years in all quarters of the industrial world by reason of this increasing utilization of the results of scientific research, have one aspect which at the present time is much in the minds of practical men as well as theoretical economists, and to which Mr. Balfour drew attention—namely, the dependency of all industry upon the supply of usable power, and the fact that such power is derived almost exclusively from coal. That being so, it is naturally a matter of first importance that our stores of that prime energy should be utilized to the very best advantage, and economized in every possible way. It is most interesting to observe that on this question Mr. Balfour takes up what one may be allowed to call the common-sense, as opposed to the hysterical or unpractical, attitude. With remote speculations as to what humanity will do for its means of existence when the world's stored-up resources of energy are exhausted, and it has to depend upon the diurnal heat of the sun and the rotation of the earth for its motive power, Mr. Balfour refused to deal. On the other hand, while recognizing that the contents of the mines are limited and beyond our power to increase, he declined to join forces with those who call for an artificial limitation of the drafts being made upon our coalfields. Our one hope, in his opinion, lies in the possibility of a greater economy being practised in the consumption of our stores of coal.

Mr. Balfour used, perhaps, the language of exaggeration when he said that our methods of utilizing our supply of power have altered strangely little in detail, and not at all in principle, since the days of Watt; but there is a broad substratum of truth underlying his words. The steam-engine is undoubtedly not the most economical extractor of power from coal that can be imagined; and it at present holds the field. In that fact lies the possibility of a discovery of some means by which the power-value obtainable from every ton of coal in the mines might be doubled, and the duration of our coalfields be vastly, if not proportionately, increased. We say "not proportionately," because, as Jevons long ago pointed out, every cheapening of the unit of power stimulates the industries to which it is vital, and increases its consumption. Mr. Balfour, then, pins his faith for a solution of the problem of the possible exhaustion of our coal supplies—a problem which really only concerns generations remote from the present—to the advent of "a second Watt." He speaks the true philosophy of the question, we believe, when he says that we must frankly "recognize that it is only by new inventions that the collateral evils of old inventions can be mitigated. To go back is impossible; our only hope lies in a further advance." Such a far-seeing judgment is indeed refreshing reading after the vapid chatter of the uninformed but unashamed daily Press.

THE BETTERMENT OF THE WORKING CLASSES.

The writer of this book,* Dr. N. P. Gilman, will be already known to those of our readers who have followed closely the efforts made in recent years to popularize profit-sharing as a step in the direction of promoting industrial peace by means of creating a community of interests between capital and labour; for his work on "Profit-Sharing between Employer and Employed," published in 1889, has enjoyed a considerable popularity. The purpose of his present work has been to investigate, and to describe collectively, the various schemes that have been devised and put into operation by employers in different parts of the world for the betterment—social, moral, and pecuniary—of their workpeople; and his "practical aim has been to present these facts, which appear to exhibit a finer conception of the employer's function than is commonly held, in such a way as to incite other intelligent and successful employers of labour to go and do likewise." The book is, therefore, addressed to employers chiefly, but with the desire to convey information rather than advice; for the author recognizes the fact that, in these days, the capitalist receives more than enough of the latter commodity from any "number of persons, quite inexpert in practical affairs, who are ready to tell him the only just way of managing his business so far as concerns his employees."

Dr. Gilman explicitly disclaims posing as the advocate of the working man. He does not make the mistake of those who adopt the "cult of the horny handed"—the mistake of thinking that working men as a body could dispense with the employer's brains and capital, and would, indeed, prosper more greatly without them. "I have," he says, "a profound conviction that a true and natural aristocracy—the leadership of the competent—is to endure in the industrial world, as elsewhere, for an indefinite time. . . . I have no difficulty in believing in the fundamental rationality of the men who employ their fellow men in large or small enterprises; I do not doubt their predominant desire to be fair and just in their dealings." With this prefatory evidence of reasonableness and fairmindedness before us, we turn willingly to the consideration of the ideal which the writer sets forth as realizable by the employer of men on a large scale, the essence of which is the combination of financial success in the business with the moral and material welfare of the employed. Dr. Gilman, at the outset, observes with perfect truth, what is too seldom recognized, that "it is far more important for the workman that his employer shall be financially successful, than that he shall be kind or generous in his dealings. A hard employer who keeps his men steadily at work for years, on the average wage, is much more of a real benefactor to the operative than a genial employer whose inexperience or lack of capacity closes the factory in a few months. The latter will have the sympathy of his employees; but he is not their best friend. The responsibilities of a typical great *entrepreneur* of this century are many and varied, and they call loudly for the strong man in the manager's chair. . . . A fine morality, in the sense of sympathy or kindness or generosity, on the employer's part, is a secondary matter, however important, just as in deeds

* "A Dividend to Labour: A Study of Employers' Welfare Institutions." By Nicholas P. Gilman (Houghton, Mifflin, and Co.).

of war the morality of a Napoleon or a Moltke is not primary. But assuming the existence in him of all the abilities required for the prosperous working of a great industrial establishment, then good-will to men, sympathy with one's kind, and the human touch [as in a Roberts] are happy and fortunate and admirable additions to the vigour of mind and the power of will which have taken a bond of fate."

It is not, in short, absolutely essential that the employer, in order to be a successful, should be a moral man; but the difficulties of the labour question can never be overcome unless employers increasingly recognize the moral obligations and opportunities of their position. For it is undoubtedly true that much of the hostility of the better-informed among the working classes of the present day towards employers as such is an inheritance from the early days of the factory system in England, when, as Dr. Gilman puts it, "the duties, not alone of justice and kindness, but even of ordinary humanity, as we to-day understand it, were frequently and grossly disobeyed, especially in the treatment of women and children." Those employers who strive faithfully to fulfil their moral obligations to their workpeople may not always reap an immediate harvest of gratitude; but they are as undoubtedly sowing the seeds of a better relationship between master and man in the future, as the millowners of 1780-1830 sowed the tares of hatred and discord, which are by no means yet uprooted, in the minds of the working classes.

Enlightened selfishness on the one hand, and the force of public opinion on the other, have brought about at the end of the century a very different state of affairs from that existing in its earlier years; but it is truly said that the employer who recognizes no obligation towards his workpeople other than the legal, however moral he may be in his life as a citizen, has not achieved true industrial morality. "He has not realized the full demands of a sound morality, *which has no conflict with economic truth or economic law*, but the force of which cannot be excluded from any relation which is human." The sentence we have italicized is vital to a true appreciation by employers of their opportunities, and consequent obligations. It was the failure to realize its truth that marred the conduct of the Cobden school, though that failure did not, as some think, disprove the soundness of the economic principles taught by that school. The Cobdenites allowed one truth to occupy their vision to the exclusion of others. The duty of the present day is to comprehend and apply economic and moral principles in harmony, and to realize that there is no conflict between them if rightly understood and rightly put into practice.

The application of moral principles to the relations between employers and employed involves for its full scope and ultimate success—that is, for its complete achievement combined with avoidance of conflict with economic law—the co operation of the workman with his master. The former, as well as the latter, must appreciate and perform his moral duty. "If a workman simply work hard enough and carefully enough to retain his position in a factory; if he feel no desire that his employer shall prosper because he himself does his best, with all his fellows; . . . he, too, is imperfectly moralized, so far as his relations to the employer are concerned. He, too, needs an ethical development, if he thinks that the whole duty of industrial man is thus discharged by him." That is a truth too seldom realized, and still more rarely preached, by the labour leader or by the political "friend of the working man." But its appreciation is essential to the ultimate prosperity of the working classes. It has been the failure of some of their men to grasp this fact of mutual obligation that, as we understand it, has proved one of the hindrances to the absolute success of the South Metropolitan Gas Company's profit-sharing scheme—described at length by Dr. Gilman—and it is obvious that patience, tact, and firmness on the part of the employer are needed, in addition to the mere will to fulfil his moral obligations. Schemes intended to benefit may be utterly futile, and even demoralizing, if they be merely instituted and not given care and thought in their administration. It is, indeed, just by reason of careful and thoughtful administration that the South Metropolitan scheme has achieved the large measure of success to which it has attained.

So far, and at some length, we have been discussing generalities; but we have not got beyond Dr. Gilman's prefatory chapter to the bulk of his book, which is strictly particular and practical. In fact, we do not now propose to deal with those practical sections (for our space would not enable us to do so with justice to the author or value to the reader), but will be content with saying that those sections are full of most valuable information as to what has been already achieved by employers in Germany, France, Holland and Belgium, America, and Great Britain for the social, moral, and general welfare of their employees. Scores of benefit schemes and institutions are described in detail; and in bringing them together, Dr. Gilman has done most useful work. Upon the basis of his acquaintance with these actual achievements, Dr. Gilman founds the First Part of his book (with which alone we have concerned ourselves in this article), wherein he sketches out a "realizable ideal" at which an employer may reasonably be asked to aim. The following quotation, in which the limitations that the conditions of commercial and social life set around such an ideal are recognized and enumerated, may serve to commend, as we would wish to commend, this most excellent book to all concerned with the future relations between capital and labour.

> The ideal presented by the earnest man of thought to the practical man of business should, of course, accord with the plain necessities which beset his occupation. The ideal should be distinctly realizable by men who are neither heroes nor saints nor philanthropists; they might fail in business if they attempted to be any of these! The ideal must not be a pattern set in the mount to which those who cultivate the common levels of life can have no inward attraction. It must be in close touch with reality, make no cruel demand on the average man, and harmonize with the laws of economic success. It must tally with the practice of the best men in different walks of business—those who stand highest in point of ability and character before the world at large. It must not be an ideal which requires that the individual employer shall act as if the making of his living were a minor matter with him, or shall conduct his business according to an economic or social system profoundly different from the one prevailing all about him. It must be an ideal, however, which necessitates the "human touch" in all social relationships, and rejects every tendency on the part of an employer to treat the men whom he employs as if they were machines, or animals of another and lower species than himself.

Does not the author's common sense bespeak consideration for his "realizable ideal?" At a future time we shall hope to mention some of the realized workmen's benefit schemes upon which this ideal is founded. For its description, we refer our readers to Dr. Gilman's admirable little book.

PERSONAL.

Mr. J. HAMPSHIRE has been appointed, out of a large number of applicants, Outdoor Superintendent to the Canterbury Gas and Water Company. He has been Meter Inspector at Littleborough for nearly six years.

Dr. LAWRENCE W. ADAMSON has resigned the office of Chairman of the Newcastle and Gateshead Gas Company, and Alderman Sir W. HASWELL STEPHENSON, the Deputy-Chairman, has been elected to succeed him. Mr. E. ARMORER HEDLEY will fill the position vacated by Sir W. H. Stephenson.

The Chester Water Company have recently lost by death their Chairman, Mr. WILLIAM BROWN, who was the holder of the position for the long period of thirty years. Mr. F. E. ROBERTS, the Deputy-Chairman, succeeds to the office. The Company have also lost the services of their Secretary, Mr. E. LLOYD; and his old assistant, Mr. W. S. MOSS, has been elevated to the vacancy.

Alderman J. MILES, the Chairman of the Bolton Corporation Gas Committee, among his other accomplishments, is a musician; and he is the organist and choir master of Deane Church. Between the members of the choir and the master there has existed for the last 36 years the greatest good-feeling and unanimity; and, as a testimonial of this, a few days ago the members presented him with a handsome ivory silver-mounted *bâton*, bearing the following inscription: "Presented to Alderman Miles, J.P., by his choir, as a token of esteem. July 28, 1900."

The official changes in connection with the Derby Gas Company, which have already been announced in the "JOURNAL," were features of the meeting of the shareholders last Wednesday; and it is exceedingly gratifying to find that the long and faithful services of Mr. RICHARD FISHER and Mr. CHARLES TAYLOR, who have lately relinquished the positions of Secretary and Engineer respectively, have been recognized. Mr. Fisher had been with the Company for upwards of fifty years—Mr. Taylor's period of service being thirty-five years; and the shareholders decided to grant the former gentleman a life pension of £200 per annum, and approved of the Directors' decision to allow the latter £250 per annum. On the same occasion, the selection by the Directors of Mr. H. Bullivant and Mr. J. Ferguson Bell as their successors was unanimously confirmed. We may mention, in this connection, that Mr. Taylor is commencing practice as a Consulting Engineer at Derby.

We regret to learn that Mr. B. W. SMITH, who was not long since appointed Engineer and Manager of the Walsall Corporation Gas-Works, recently met with a serious accident. While playing golf at Sandwell Park, he put his foot into a rabbit-hole, and broke his ankle. It was found impossible to remove him to Walsall direct, so he was taken to the house of a doctor at Smethwick, where the bone was set. Things progressed favourably, and the injured limb was put into plaster of Paris, and arrangements were made to remove the patient to Walsall. He was placed in a car, and, accompanied by two doctors, started for home about nine o'clock in the evening. On the road there occurred a succession of accidents to the vehicle and its occupants, the account of which in a local paper reads almost like romance. One of the doctors had his nose badly injured, the other sustained a cut over the eye (his head being sent through the glass at the back of the carriage), and the top of Mr. Smith's head was badly bruised. After much difficulty, a fresh car was procured, and on this he was conveyed home, which was duly reached at six o'clock on the following morning, after what must have been an agonizing and certainly a most remarkable experience.

OBITUARY.

The death is announced of Mr. JOHN PARKER, Chairman of the Finedon Gas Company, at the advanced age of 83. Deceased had resided at Finedon for upwards of sixty years, and took an active interest in the public life of the town. He had consequently a large circle of friends.

We regret to record the recent death, at the age of 78, of

ROBERT DARNEY, who for a period of forty years held the position of Manager of the Faversham Gas Company, which he relinquished as recently as April last, and was appointed Consulting Engineer. When the water-works were established, in 1864, he was selected as the first Manager; but he resigned about three years ago.

We have to-day to announce the recent death, at Brooklyn, New York, of Mr. WILLIAM ROMANS. Deceased, who had a good number of friends in the gas profession, was a brother of Mr. John Romans, from whom he received his training. He was at one time Assistant to the late Mr. David Methven, at the old Imperial Gas Company, and subsequently Chief Engineer in Dublin, Sheffield, and Rochdale. He was brought up as a millwright in Scotland, and was on the staff of Messrs. J. Scott Russell and Co., the builders of the *Great Eastern*, the keel of which he laid.

The death is announced of Mr. R. L. HATTERSLEY, who from 1877 to 1894 (with the exception of one year) was Chairman of the Gas Committee of the Keighley Corporation. It was during his tenure of the office that the gas-works at Thwaites were erected. Mr. Hattersley co-operated heartily with Mr. John Laycock, the Gas Engineer to the Corporation, in carrying out this undertaking; but he ceased to be a member of the Corporation before it was completed. Six weeks after his retirement, the employees of the Gas Department presented him with a handsome silver inkstand, which he very highly valued, inasmuch as it was the first testimonial he had received during his 58 years' association with the work of the town. Deceased was in his 80th year.

The Proper and Improper Use of Gas-Stoves.—In the Architecture and Engineering Section at the Public Health Congress in Aberdeen, Mr. Durward Cecil, of London, referred to the use of gas-stoves, and said that while he was perfectly sure it was possible to use these appliances for heating and cooking without any injury to health, there were immense numbers of them in operation which were hostile to healthy conditions. Unless perfect combustion was ensured, the general promiscuous use of gas-stoves would, in his opinion, be dangerous to health—not in the way of fatal illness, but in the lowering of vitality, which rendered the body more susceptible to the attacks of the enemies of human life.

An Alizarine "Combine."—The "Chemical Trade Journal" says that, after many years of savage competition, the half-dozen alizarine makers of the world have arranged with each other as to the future position and price of alizarine. It has been decided that two of the Continental makers (Messrs. Neuhaus and Messrs. Gauhe) are to cease manufacturing; so that the world's requirements for the moment will be left in the hands of the Baden Aniline and Soda Works, Messrs. F. Bayer and Co., Messrs. Meister, Lucius, and Brunning, and the British Alizarine Company. The manufacture of alizarine has been a very unprofitable one for years past, and, as a consequence, anthracene has been such a drug in the market that many distillers of coal tar have ceased to recover it. Our contemporary says, however, that Messrs. Sadler and Co., of Middlesbrough, who for some years produced alizarine on a large scale, but ceased to do so when prices became unremunerative, are now reopening their works; and it is thought that, not being members of the "combine," they ought to have no difficulty in disposing of their make in the British market. The ultimate effect upon the anthracene market cannot be easily foreshadowed; but, according to the above-named authority, there is so much anthracene, especially "B" quality, at the moment absolutely a waste product, with which the market could be promptly deluged, that it is feared that any substantial rise in price must not be looked for in the immediate future.

The Annual Report of the Chief Inspector under the Alkali Acts.—The report of Mr. R. Forbes Carpenter, the Chief Inspector under the Alkali, &c., Works Regulation Acts, giving an account of the labours of himself and his colleagues in the past year, was issued yesterday. It possesses more than the usual interest, inasmuch as Mr. Carpenter embodies in it the results of some researches he has made into the condition of the market for raw material and for residual products of gas manufacture at the close of the first half of the century. He gives an analysis, compiled from an early number of the "JOURNAL," of the return made to the House of Commons, to the order of Mr. Joseph Hume, on the gas undertakings of the United Kingdom in 1849, which shows that the price of caking coal then ranged from 5s. 4d. to 19s. 6d. per ton, and the value of residuals from 20s. to 55s. per cent. of the cost of the raw material. Some interesting figures in this regard are supplied by Mr. J. H. Cox, of Sunderland, who, as our readers are aware, last year celebrated the jubilee of his connection with the Gas Company in that town. We cannot notice the report at any length to-day. Suffice it to say that we learn therefrom that the quantity of sulphate of ammonia produced last year in the United Kingdom was 208,481 tons, as compared with 196,357 tons in 1898 and 198,280 tons in 1897; gas-works furnishing 136,529, 129,590, and 132,724 tons respectively of these totals. The number of works registered under the Acts is 1182, of which 127 are in Scotland. The number of visits paid to these works was 5011; and 5585 tests were made. We shall deal more fully with the report in an early issue.

NOTES.

The Rate of Depreciation of Electric Power Plants.

Following up his study of the cost of electric power production, Mr. Philip Dawson has published in "Engineering" some particulars relating to the cost of the plant. The author remarks that, being actual records, they will at least be useful for the checking of engineers' estimates. The figures, of course, vary greatly in these examples. One point of general application, however, is the cost of the capital expended, whatever it may amount to. This cost includes the interest, the sinking fund, and the rate of depreciation. The two former must be first computed on the basis of fact, then the latter is to be ascertained in accordance with the following table: Buildings, from 1 to 5 per cent. on prime cost; boilers, 8 to 10 per cent.; dynamoes and engines and all belted machines, 5 to 10 per cent.; direct-driven plants, 4 to 8 per cent.; transformers, 5 or 6 per cent.; accumulators, 9 to 11 per cent.; meters, motors, rotary transformers, &c., about the same. Accidents and insurance should be put down as from 0·75 to 2·25 per cent. of the gross receipts. Very little electrical plant is worth anything after twenty years. An average charge of 3 per cent. for depreciation must be made on the gross capital expenditure. If this statement is correct, the number of solvent electricity supply undertakings in the United Kingdom is far smaller than is generally supposed.

The Quantitative Measurement of Sensations.

Professor C. Lloyd Morgan has described in "Nature" some attempts made by himself to measure the quantitative relation of stimulus to sensation in human vision. As he remarks by way of introduction to the subject, nothing has done more to place on a scientific footing the discussion of the phenomena which the study of matter and energy presents to the eye of reason, than the establishment of a doctrine of quantitative equivalence. So much oxygen and hydrogen, so much water; this amount of energy of chemical separation gone, that amount of sensible heat gained. In the sciences that deal with problems of life and mind, the endeavour to measure stimuli and effects quantitatively is productive of some curious results. There is obviously some general relation of this kind. Increased physical pressure is, within certain limits, increasingly felt. More light gives a higher degree of visual sensation. Such statements are, however, indefinite. We want to know how much the physical increase must be to give just so much increment in sensation. If we double the strength of the stimulus, do we double the strength of the sensation? If not, by how much do we increase it? Ernst Heinrich Weber was the first to experimentalize upon the quantification of sensation. He used the method of the least observable difference. Thus, if a pound weight is placed upon the hand, a sensation of pressure is experienced. If now an ounce weight is added to the pound, no difference is felt; nor is the added weight of two or three ounces perceptible. It takes another third of a pound to give the sensation of greater pressure. Professor Morgan has tried the sensitiveness of the eye to graduated tones of grey produced by rapidly spinning a disc with white and black sectors; and he finds that, for constant increments of sensation, the concomitant increments of stimulus are in geometrical progression.

The Truth about Motor-Cars.

The "Engineer" recently published some valuable observations on the French mechanical road carriage industry, in connection with the show of motor-cars at the Exhibition and the holding in Paris of a congress of specialists in this branch of mechanical engineering. It appears that no real progress is being made in electrically-driven motor-cars; the enormous weight of accumulators being the obstacle. Most French motors are of the lighter kind, driven by petroleum spirit engines; and a large and increasing trade is done in these. Still, it was confessed by the President of the congress, M. Forestier, that there is yet much to be done in putting motor-car makers in the way of turning out really satisfactory vehicles. At present, the patent system is militating against the development of the manufacture on common-sense lines. Every maker has his patents to consider; and he makes all his motor parts as special and exclusive as he can, regardless of the users' interest in having simply made and cheap cars, with nothing about them that could not be replaced at the first smiths' shop met with on the road. While manufacturers try to protect themselves with patents, the public will have to wait in vain for a car embodying all the essentials to success in a simple and cheap form. Meanwhile the congress confirmed the impression which has been spreading for some time, that the application of steam to the driving of waggons on common roads, apart from the traction engine, is a failure. M. Bollée, who built the first steam-car in France 25 years ago, said that his experience had been that a steam-car selling at 14,000 frs. cost 15,000 frs. for repairs, and at the end of five years is only fit for the scrap heap. M. Forestier declared that steam haulage will never be so economical as horse haulage; the ordinary draught animal being able to do 5000 times its weight in work in the course of a day. It may be remarked on the same head that the experience of the Chiswick Urban District Council has not been favourable to the use of steam motor-vans for dust collection.

TECHNICAL RECORD.

THE INTERNATIONAL GAS CONGRESS IN PARIS.

The Official Programme.

Those who have signified their intention of taking part in the International Gas Congress to be held, as previously announced, in Paris during next month, will have received from M. Th. Vautier, President of the Société Technique du Gaz en France, and of the Organizing Committee of the congress, the programme to be gone through, with a list of papers to be read, and tickets of admission into the Exhibition grounds, where the meetings will take place in the Palais des Congrès. The opening ceremony is timed for nine o'clock on the morning of Monday, the 3rd prox., after which the President will give his address. A start will then be made with the papers to be read. In the evening a reception will be held by the members of the Société Technique at the Hôtel Continental. The following day will be fully taken up with the reading of papers; while in the evening members will be afforded an opportunity of seeing different gas appliances at the show-room of the Paris Gas Company. The technical communications will be concluded on Wednesday, the 5th prox., in order that the next day may be spent in sight-seeing in the Exhibition, and in the afternoon in visiting the Clichy Gas-Works, by the kind invitation of the Paris Gas Company. Adherents of many Gas Associations will be present, from Germany, America, Austria, Belgium, Holland, Italy, Switzerland, and England; so that the international character of the congress will be fully maintained.

The list of papers numbers 28, among others, of which details will be given in due course, being one on "Inclined Retorts," by Mr. C. E. Brackenbury, of London, and one by Mr. Frederick D. Marshall, of Copenhagen, on "Coal-Handling Plant." There are two from the pen of Dr. J. Bueb (of Dessau), the first dealing with the manufacture of cyanides, and the second on "Means to be Adopted for Avoiding Naphthalene Obstructions." Dr. A. Smits, of Amsterdam, contributes a paper, as also does Dr. H. Bunte, of Carlsruhe; and among several other authors are Messrs. Eichelbrenner, of Paris, Miller and Forstall, of New York, Sospizio, of Trieste, Gibbons and Shelton, of Philadelphia, and Bouvier, of Lyons. The variety of subjects dealt with, and the names of the contributors, lead one to anticipate an instructive as well as an entertaining congress.

THE SCOTT-SNELL SELF-INTENSIFYING GAS-LAMP.

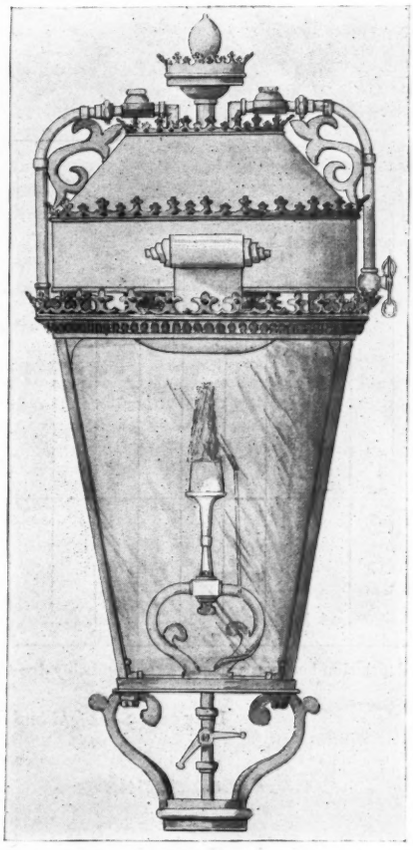
Everything relating to high-pressure incandescent gas lighting is of exceptional present interest to the gas industry; and therefore our columns are open to all who have in this particular line anything new which bears the stamp of merit, and is worthy of special notice. The advantages of the high-pressure system have been extolled in these pages time and again; and we have shown that they are of a character that something far beyond the present view of scientists will be required to depose the new method of obtaining such a high lighting intensity at such low cost. It could not, however, be expected that invention would stand still, and that efforts would not be made to attain to yet greater excellence—if not in the lighting power, in the method of obtaining it. Busy brains have been, and are now, working in this field; and, as a result, we have to-day to call attention, with greater prominence than has yet been done, to an invention which is distinctly novel, and which will, an examination gives us the hope, greatly assist in strengthening the backbone of the gas industry in its competition with the electric light. Speaking of electric lighting leads us to say that gas engineers have almost ceased to regard incandescent electric lighting as serving any more useful purpose than to provide data for calculation showing the overpowering relative advantage of gas as an illuminant. With the spreading knowledge of high-pressure gas lighting, too, there are signs that arc electric lighting will also similarly recede, even in such applications as the illumination of large open spaces, streets, and the like.

We have been shown that the new invention of which we have now to speak will enable the gas engineer to change the character of any street gas-lamp from an ordinary 60-candle light to one of 300-candle power or more without any additional pipes, without any cost for "power," and without disturbing a single underground connection; and this is no mean achievement. To quote the patentee's own remarks—

> There are hundreds of thousands of gas-jets burning nightly in our streets, possessing potential advantages almost undreamed of by our Vestries and Gas Companies. From each light, indeed, there runs to waste the "power" to change its own character until its illuminating power is multiplied by five or more. This is now utilized by such simple means, and in so natural a manner that there is no clockwork, neither joint or lever, to require oiling, and virtually but a single moving part; and, further, the lamp may at will be used either as an ordinary 60-candle power burner, or allowed to intensify itself to 300-candle power or more.

The inventor of this new self-intensifying lamp we may at once say is Mr. C. Scott-Snell, who has had considerable previous experience in incandescent gas matters, having been associated with the Welsbach light upon its advent about fifteen years ago. As readers may also recollect, a gas-compressor which he had invented was exhibited in the Gas and Allied Trades Exhibition at the Royal Aquarium in the early part of the year. But although an inventor of a compressor, Mr. Scott-Snell's further experience and study have convinced him that external compressors are not the best means of attaining the desired goal. Upon him rests the responsibility for the following views on this point; and readers are free to coincide or disagree with him as their experience dictates. He remarks—

> Given the possession of the most perfect compressor, ignoring all question of cost of water power for driving, trouble from frost, usual occasional attention to mechanism and such-like, the troublesome factor of expense blocks the way. £ s. d. and economical vestrymen are hard to reconcile. They admire a powerful and economical light; but the patentee can see with their eyes when a concession for a trial at his own expense is offered. It looks so simple. Fifty pinholes in a row to be supplied with gas at 9 inches pressure, or, more correctly speaking, two rows exist—one each side of the street; and the trifling matter of 50 yards may intervene between the pinholes. A snug corner for the compressor having been selected (with the certainty of quarterly reminders that it is not your own freehold), and your troubles begin. The trifling 50 yards (more or less) of space between the pinholes proves a hard nut to crack. Two inches of asphalt is of no great moment; but 9 inches of concrete is another matter. More exasperating still is the knowledge that gas is already laid on at each desired point. So farewell to compressor and piping. The advantage of the system is only to the pocket of the navvy. One sighs for some kind of overhead system; but it cannot be. Hence the evolution of the self-intensifying lamp. This has changed the picture. It enables the lighting authorities to crown the already erected lamp-posts with a brilliancy previously undreamed of. And so easy too! A single lamp at the patentee's expense is a small matter; and it will assuredly result in the delight of the local authority. Extensions can then be made, as desired, at the rate of half hour per lamp, without interruption of the traffic. Thus, by a moderate expense and little trouble, the appearance of the streets at night time may be transformed.



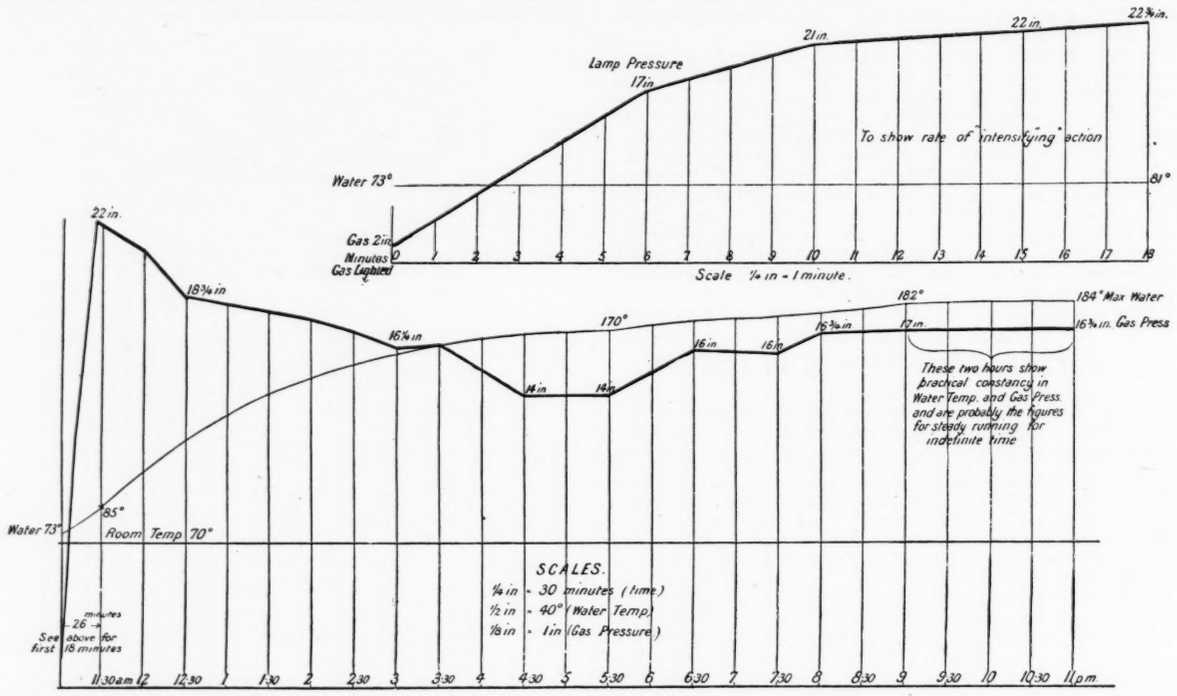
Before proceeding further, we will give some constructiv details of the new lamp, which was illustrated in our "Registe of Patents" on April 24 last. Certain improvements which have recently been made may form the subject of a notice on a future occasion. The lantern to which we saw the invention applied (at the office of the Scott-Snell Phillips Syndicate, No. 51, Victoria Street, S.W.) was an ordinary one with circular top; and therefore, we assume, the invention can be adapted to any existing suitable lantern. Describing it in plain language, the invention may be said to consist essentially of a hollow vessel arranged immediately above the central aperture in the reflector. The underside of this vessel is, of course, heated by the ascending products of combustion, which are then led away through two side chimneys. The upper surface of the vessel (hereafter we shall refer to this vessel as the body) is cooled by a water-jacket, formed by the outside skin or cover of the lantern-top; and from this surface the heat is radiated as the water warms. Inside the hollow body referred to is a "displacer," in shape similar to the body itself, but being clear of the sides, and of about ⅛ inch less vertical depth. With this displacer resting upon the heated bottom of the body, it is obvious that a layer of gas (for the body is connected with the gas supply, a check-

valve being in the circuit), about $\frac{5}{32}$ inch deep, occupies the upper part of the body. If the displacer be lifted, the gas is caused to accumulate at the base of the body, a clearance of $\frac{5}{32}$ inch now existing under the displacer. But the bottom of the vessel is heated, and the gas therefore expands. It cannot return by the inlet-pipe on account of the check-valve; but it finds its way out by another pipe (also fitted with a check-valve) into a small container or reservoir, from which the burner is fed. The downward return of the displacer now transfers the remnant of heated gas to the space at the top, which, being cool, causes condensation and vacuum. The expelled heated gas cannot return on account of the check-valve; and the vacuum therefore causes a suck upon the inlet-pipe, and the body is recharged with gas. Thus, provided the displacer be reciprocated vertically, the action is exactly equivalent to a pump; and the result is accumulated gas under pressure in the reservoir.

The necessary reciprocation is effected in a very simple manner. A tube runs centrally upwards from the body into a small box, the lid or cover of which when screwed down embraces a horizontal disc or diaphragm. Through the centre of the diaphragm (and clamping it between two screws) runs a rod ending in the displacer to which it is secured. The rod projects beyond the diaphragm at the top, and, with a nut, a suitable spring secured thereto takes the weight of the displacer—the diaphragm being then horizontal. The pressure produced by the heated gas acts upon the diaphragm, and causes the rod and displacer to be lifted—thus permitting more gas to pass to the heated section until the full vertical lift has been accomplished. The surplus gas meantime is feeding into the reservoir. The initial impetus communicated by the diaphragm to the displacer having been expended, this begins to fall by gravity, and starts the condensing action which follows the change of position of the displacer. The resulting vacuum acting on the diaphragm accentuates the speed of falling—thus causing a stress on the spring, which culminates in a rebound directly the vacuum ceases by the influx of more gas. In short, a continuous dancing of the displacer takes place; and this is the only moving part in the appliance except the slight movement of the little check-valves. No oiling is required; and no friction exists. This description, without liberal illustration, may not be very clear. But it all amounts to this—that the gas, at ordinary pressure, is led from the lamp service-pipe to the automatic arrangement situated in the head of the lamp. It is there compressed in the manner explained, and is then led down the other side of the lamp, and supplied to the burner at any suitable pressure.

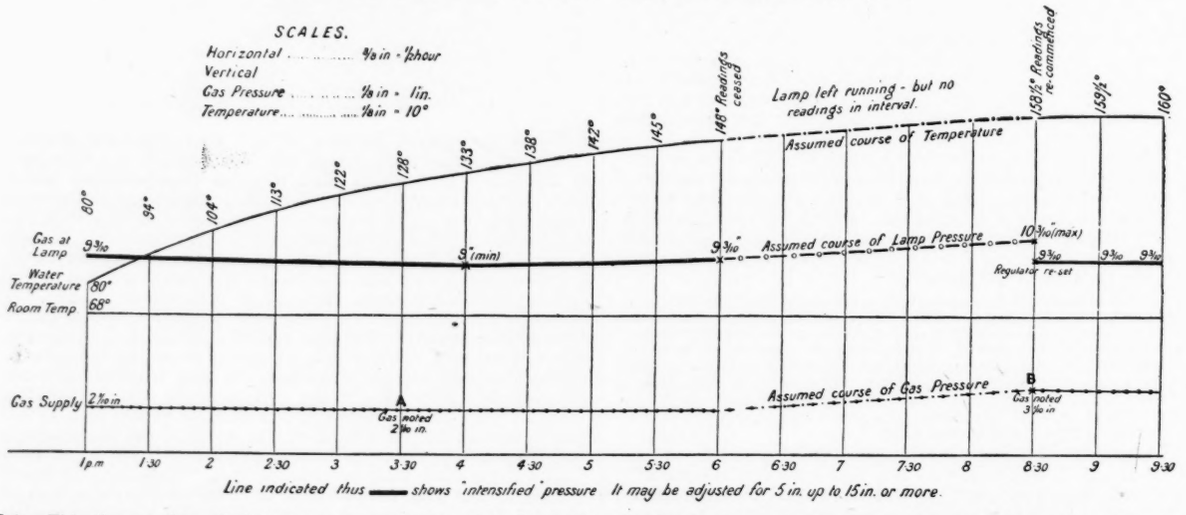
Among other interesting points upon which information may be desired, we have gathered these: The size of head involved in converting a lantern into an intensified lamp is not greater than normal. Evaporation of the water is guarded against by sealing up the vessel with the addition of a pressure and a vacuum valve. This at present is effected by a rubber disc, with

DIAGRAM 1.—*Twelve-Hour Test of the Self-Intensifying Lamp.*



Note.—The depression between 3.30 and 6.30 is probably due to the spring at the head, which was unsteadily mounted, and was subsequently changed, and gave steadier results.

DIAGRAM 2.—*Eight-and-a-Half Hour Test of the Lamp on Aug. 2 last.*


SCALES.
Horizontal ⅛in = ½hour
Vertical
Gas Pressure ⅛in = 1in.
Temperature ⅛in = 10°
148° Readings ceased
Lamp left running - but no readings in interval.
158½° Readings re-commenced
159½°
160°
Assumed course of Temperature
60° 94° 104° 113° 122° 128° 133° 138° 142° 145°
Gas at Lamp 9 3/10
5" (min)
9 3/10"
Assumed course of Lamp Pressure
10 3/10" (max)
9 3/10
9 3/10
9 3/10
Regulator re-set
Water Temperature 80°
Room Temp 68°
Gas Supply 2 7/10 in
Assumed course of Gas Pressure
Gas noted 2 7/10 in.
B
Gas noted 3 1/10 in
1p.m 1.30 2 2.30 3 3.30 4 4.30 5 5.30 6 6.30 7 7.30 8 8.30 9 9.30
Line indicated thus —— shows "intensified" pressure It may be adjusted for 5 in. up to 15 in. or more.

Note.—This diagram shows that the lamp pressure only varied $\frac{1}{10}$ inch during the first five hours when continuous observations ceased. At 8.30, when observations were resumed, the lamp pressure had risen 1 inch in accordance with the 1 inch rise in the supply pressure. On a circuit with a different governor, the lamp pressure would be practically even.

a knife-cut in it; so that normal sealing is effected, but the sagging or bulging due to vacuum or pressure causes an opening to appear. At the base of the burner is mounted a special two-phase nipple, the exact function of which is to provide duplicate feeding apertures—one for high and one for low pressure. By a special arrangement, when first lighting the lamp, the low-pressure feed alone is in action; but on the intensifying action setting up, this feed automatically closes, and the high-power aperture is in action. It is thus possible to use the lamp, if wished, as an ordinary (say) 60-candle power burner, or, by merely opening a cock, admit the gas to the body containing the displacer, and allow the lamp to "intensify." In response to general demand, the lamps will be sent out adjusted to any pressure between 8 and 10 inches. But the reserve of power is such that, if desired, users can permit the pressure to rise to 15 or more inches upon special occasions, and so materially increase the light. The gas reaches the burner in a highly heated state; and this (although no photometrical tests are yet available for publication) without doubt produces further economy. As the cost for power is *nil*, and some of the attendant capital expenses involved in compressor systems are absent, this light should certainly show specially economical figures. But that is a matter on which we have at present nothing definite to say. Commercially considered, the system is easily introduced; the cost of a single lantern enabling any local authority to test intensified lighting in any position to which gas is already led. Even if conservative tendencies prevented further advances, the lamp cannot be regarded as a "white elephant," as it can be left to run as an ordinary lamp. There is no danger; and each lamp being independent, an accident will not cause the disablement of a number of lamps. The lanterns may be fitted with single burners or clusters, giving a light of 1000 to 1500 candles.

The two diagrams which we publish are interesting; and they are almost self-explanatory. Diagram 1 shows that the lamp when not governed or retarded produced a pressure of 17 inches of water within six minutes of lighting up; in ten minutes this had risen to 21 inches; and in 18 minutes it was 22¾ inches. The lamp was then allowed to run uninterruptedly for twelve hours. The gauge gradually fell until a minimum of 14 inches was reached, rising again to 16¾ inches, which was the lowest reading for the concluding three hours—the variation being only ¼ inch in the interval. The dip to 14 inches is explained by bad adjustments, which were set right; and the pressure consequently rose again. As the lamp-head had to be kept cool by water, it is interesting to note that the maximum temperature never exceeded 185°, although inside a room having a temperature of 70°. In Diagram 2 (a trial in which the gas pressure was controlled so that its maximum did not reach 10½ inches) the maximum water temperature is given as 160°, after 8½ hours' run. As already mentioned, water evaporation is prevented by an ingenious arrangement, so that inspection for refilling need only be made when the mantles are being renewed. The illustration of the lamp gives a general idea of its outward appearance. Although it accomplishes so much, there is to the eye very little about it different from other large street-lamps. The chief part of the arrangement is contained in the upper part of the lantern; and this does not materially increase its size.

A point of considerable importance in the system seems to be the two phases of the light. Possibly lighting authorities would find economy in running the lamps for the first hour after lighting up at their ordinary power of 60 candles, and then up to midnight at 300 candles—again changing to 60 candles for the remaining time. This, it is true, would mean a little more labour; but it would be an easy matter of calculation to find the economy in gas consumption. Certainly in shops, railway stations, and many other positions, where there is always someone in attendance who could undertake the duty, there would be an advantage in adopting this course. In shop lighting the power to run the lamps at higher pressures—say, 15 inches or more—is easy of attainment by throwing the regulator out of action; and this might be an advantage on occasions when extra brilliance is required.

We give these particulars about the new invention as they were gathered and supplied at the time of our inspection of the lamp; and we have to acknowledge the courtesy and freedom with which Mr. Scott-Snell and Mr. Charles W. Phillips, the Managing-Director of the Syndicate, replied to inquiries on all points. It is our impression that the lamp has a future before it. Longer experience may reveal small weaknesses; but we could not, in the short time the lamp was before us, place a finger on a single spot in which might lurk danger to success—that is, assuming the Syndicate fix the cost of installation at a fair figure. There is no clockwork to get out of order—indeed, there is only one working part. All portions of the device, too, may be easily renewed; but renewal is not likely to be a frequent requirement. The lamp inspected (which was fitted with a No. 8 Kern burner and a mantle specially made for high-pressure work) was tried in our presence both with and without the new arrangement in use; and the difference in intensity was very marked. Without any adjustment, there was no vibration, when running with pressures purposely varied between 8 and 10 inches.

Here for the present we leave the new comer, with a simple expression of good wishes for success in the big field which exists for high-power gas lighting. It must, however, expect to meet with strong opposition from existing systems,

NORTH BRITISH ASSOCIATION OF GAS MANAGERS.

The Annual Meeting in Edinburgh.

We conclude to-day our report of the proceedings at the recent annual meeting of the Association by giving the last of the three papers read, together with the discussion to which it gave rise.

OBSERVATIONS ON RETORTING AND CONDENSING TEMPERATURES.

By FORBES WADDELL, of Forfar.

Calculating on bases supplied by respected authorities, it is found that, even in the best forms of regenerative settings, the coke required to gasify one ton of coal has a calorific value of 4,914,000 B.T.U.; while the amount of heat required to gasify the coal is represented by 809,760 B.T.U.—less than one-sixth of the value is used for its proper purpose. There is, of course, to be reckoned the heat energy lost in getting through the material of which the retort is made, and the maintenance of the internal surface of the bench walls at the same temperature as the retorts, &c. But even allowing a reasonable amount under these heads, there is certainly a great quantity of heat wasted or badly applied in retort-houses.

In the first place, the retort-houses are kept warm at the places where the men have to do the hottest work. But we are prone to get used to things not being as they should be; and, though we admit that there is a lot of heat expended on the men and their surroundings, we have to be content with the conditions. These conditions are, however, unsatisfactory; for they are evidence of heat badly applied at the best, or altogether wasted. "Altogether," of course, refers to heat expended on floors, walls, roofing, and the air which at times rushes very rapidly over the bench surfaces; and "badly applied" is suggested to me by coals being dried in front of retort-benches in winter. The latter instance, perhaps, looks somewhat of a paradox; but when it is considered that the coal must be kept more than 20 feet from the source of heat, one must admit that the drying is done at great expense, though it is certainly better than letting the heat radiate on to the wall. Retort-house walls, to my knowledge, sometimes get too hot for the hand, though there are many openings in the walls of the house referred to. On the other hand, the mouthpieces of retorts in action sometimes get cold enough to handle.

In considering whether a remedy, or a partial remedy, can be found, this occurred to me: In a setting of brick-built retorts 4½ inches thick, with a 4½-inch front wall, there is never the least tendency on the part of the front surface to become red hot; though it is observed that, at the end of a charge, the retort is a bright red. Further, the same temperature is applied to the brick retorts as to the front brick wall; and, therefore, if a door were put over part of the front wall, that part would soon get red hot, and would keep so as long as the door was shut. The door being closed only keeps the air off that part of the wall; and the two results are: (1) bricks get red; (2) air passing over that part is not much heated.

Here, however, another point occurs to me. Say that there is within the setting (I have not attempted to use thermometers therein) a temperature of 2000° Fahr., and at times the hand can be put on the mouthpiece. Then there is a difference of nearly 2000° between the temperature surrounding the retort and that round the mouthpiece; and though the latter is seldom so cold as to be handled, there is at all times a very great difference, which must mean a rapid fall in the temperature of the products of the distillation of the coal.

From a very early period in the history of gas making, managers have been exhorted to cool such products very gradually; and the importance of doing so is being brought home now with more force than ever it was in the past. It is no new thing to take the gas out of tars. There have been many ways, of which I presume the most outstanding are the Dinsmore and the Peebles processes. Both have shown remarkable results. Mr. Isaac Carr, of Widnes, in a paper read before the Manchester District Institution of Gas Engineers, stated that by passing the distillation products, on their leaving the retort, through a heated duct, the quantity was increased 10 per cent., and the quality by 4 or 5 candles. From the distillation of one ton of tar in the Peebles plant, according to Mr. Bell, there are obtained about 15,000 cubic feet of 25-candle gas and 15 cwt. of excellent coke.

In Blairgowrie, I made some slight alteration of the fittings of a setting of three retorts with the view of condensing as much tar as possible, and returning it to a specially heated part of the ascension pipe; and the results were so good that at the time I was sceptical, but was ultimately quite satisfied as to their accuracy. It has, therefore, been interesting to me to further experiment with these two points before me: (1) The saving of heat and returning it to the setting; and (2) cooling the products of the distillation of the coal more gradually. My aim has been to bring about at a single retorting the gasification of as much of the coal products as possible, with the lowest expenditure of the coke produced; and these modifications have suggested themselves to me, and been carried out from time to time.

The temperature of the gases surrounding the retort being say) from 1800° to 2500° Fahr., and that of the air playing about mouthpieces and ascension-pipes from 50° to 100° Fahr., there is, in addition to the sudden cooling, a great fluctuation—more

sudden as the temperature of the atmosphere falls, and improving as it rises. This fluctuation is from day to day and from season to season.

The experimental plant was, to begin with, an iron retort, 3 feet long by 7 inches diameter, and other plant corresponding. The first help to more gradual cooling that suggested itself was a larger ascension-pipe, giving increased duration of travel from the retort to the hydraulic main, and thereby, according to our best authorities, giving gas of increased illuminating power. The first arrangement had the stand-pipe 1½ inches diameter, and it was substituted by one 3 inches diameter, provided with a cooling vessel at the top (see fig. 1).

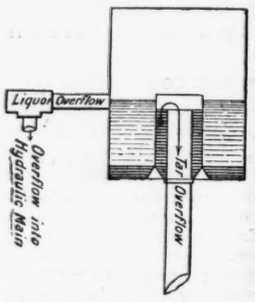


FIG. 1.—ARRANGEMENT FOR CONDENSING HEAVY TARS AND RETURNING THEM TO MOUTHPIECE.

At this point, I cannot refrain from saying a few words on my experience of different diameters of ascension-pipes, the choking of which has given most managers some trouble. First, they are simply a means of conveying gases and vapours from the retort to the hydraulic main; and although those who are troubled with chokes in them might well reason, even from a mechanical point of view, that, if there was more room for pitched tars, there would certainly be fewer chokes, still the pipes I come across are not being much increased. In addition to the extra area, there is greater cooling surface. An 8-inch pipe, for instance, has an area of fully 50 square inches compared with an area of 23·1/10 square inches in a 5½-inch pipe. The comparative rates of travel through 5½-inch and 8-inch diameter pipes are as their areas; so that the cooling efficiencies of the two are (respectively) 409 and 12,600—that of the 8-inch pipe being three times that of the 5½-inch pipe. One thing that change has brought about is the complete absence of chokes. I have not had a choked ascension-pipe for five years.

In very cold weather, however, even with high heats, there is liquid tar on the mouthpieces—evidence that a great quantity of hydrocarbon vapours is being condensed in the mouthpiece, where the temperature is much greater than in the hydraulic main. At other times, with no better heat in the setting, but with warmer air round the mouthpieces and ascension-pipe, the former is quite dry; and from the tar coke on the mouthpiece, it is evident that a good deal of tar has been gasified.

The last modification I have made is one that, while controlling the temperature of the air round the stand-pipes, returns to the setting the air which, in cooling the ascension pipes, mouthpieces, and bench front, becomes itself heated. Fig. 2

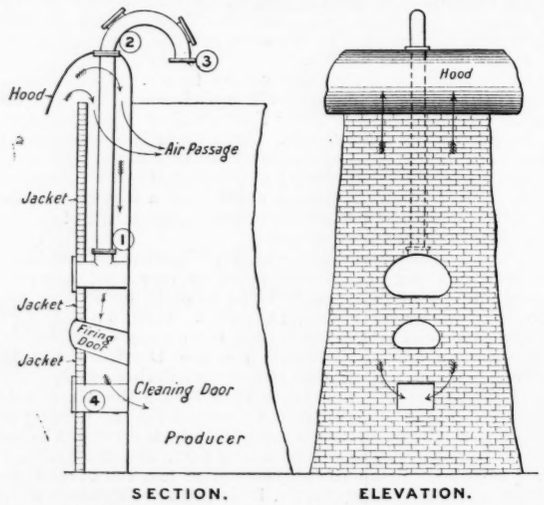


FIG. 2.—SUGGESTED METHOD OF HEATING MOUTHPIECE AND AIR FOR COMBUSTION.

illustrates the setting and ascension-pipe covered with sheet-iron in such a way that the chimney draws all the air needed for the producer and combustion chamber down between the bench surface and the bench front covering. The advantages of this are two: (1) There is, in the first place, brought about that desirable gradual reduction of temperature, or the cooling is at any rate more gradual; for, instead of the air first getting into contact with the mouthpieces when at its coldest, it commences to cool the top of the ascension-pipe, and as it gets warmer, descends to cool the mouthpieces and, indirectly, the distillation products. That order of things—the cold air first cooling at the top—means the falling out of a greater quantity of heavy tars than is the case in ordinary practice; and, further, it means the retention of hydrocarbons in their gaseous state at the mouthpiece, by reason of the air coming into contact with the mouthpiece being first heated, and on that account not cooling the coal products so rapidly. (2) The other advantage is in the air, thus heated by contact with the ascension-pipe and mouthpiece and with the bench walls' surface and the inside of the covering of bench front, being still further led over the bench surface, till, when entering the producer and secondary-air flues, its temperature has been increased from (say) 70° to 500° Fahr.

The result of this arrangement, considered in relation to better results in make and quality of gas, is tabulated side by side with results from the plant under the other conditions already mentioned. The saving of coke was quite appreciable, even with the experimental plant; and in view of this, the figures for coke-saving per ton of coal carbonized may interest you. Counting on each ton of coal producing 13 cwt. of coke, and allowing that 25 per cent. of the coke made is required to keep up the heats, we have $\frac{13 \times 112 \times 25}{100} = 364$ lbs. of coke used per ton of coal carbonized. Say that each pound of coke requires for its combustion only 12 lbs. of air—not much more than the theory figure—then the amount of air required for firing per ton of coal carbonized is: $364 \times 12 = 4368$ lbs. The specific heat of air being 0·238, and all the air required for combustion, 4368 lbs., being heated through a range of (say) 430° Fahr., then the heat given back to the setting in this way means—

$$4368 \times 430 \times 0{\cdot}238 = 447{,}020 \text{ B.T.U.}$$

That is a saving in coke at the rate of 33 lbs. per ton of coal carbonized; and I may say the estimate is very moderate, as the air was heated to the extent calculated by taking back only the air which had heated the front surface, while the air heated in the remaining surfaces was allowed to escape through the roof. A further disadvantage with this experimental plant is that the jacket protecting the bench front is of thin sheet-iron, which is not a good non-conductor. I have not had a brick covering tried; but I have no doubt it is quite applicable to a working setting, in which case I believe a temperature of about 700° Fahr. could be maintained about the mouthpiece. Such a saving as would result from tars so heated is gauged to some extent by the improved results Mr. Carr realized with the Dinsmore process; and the sale of coke per ton of coal carbonized would be increased to the extent of about 60 lbs. No doubt those figures are good, and I have not obtained them in practice; but the experiments have been carried out under fairly disadvantageous circumstances, and the results given in Table III. can, I am sure, be improved by arranging a practical setting.

Anything I have up till now said about temperatures does not specify the actual degree unless in one case; and I may further state that, on account of the unreliableness of thermometers for high temperatures, I made no attempt to use them inside the setting. But the heats were very carefully regulated so as to work off to the same colour charges of the same weight of the same coal from the first test to the last one.

The quantity of splint nuts used in each test was 1½ cwt.; and the results here given are just as found:—

OBSERVATIONS ON RETORTING AND CONDENSING TEMPERATURES.

I. Ordinary Plant.					II. Enlarged Ascension Pipe.					III. Large Ascension Pipe and Bench Front Covered.				
Temperatures, Degs. F.					Temperatures, Degs. F.					Temperatures, Degs. F.				
Hour.	1 Mouthpiece.	2 Top o Stand-pipe.	3 Hydraulic Main Outlet.	4 Primary and Secondary Air.	Hour.	1 Mouthpiece.	2 Top of Stand-pipe	3 Hydrau Main Outlet.	4 Primary and Secondary Air.	Hour.	1 Mouthpiece.	2 Top of Stand-pipe.	3 Hydraulic M. in Outlet.	4 Primary and Secondary Air.
6	185	80	110	66	6	184	70	112	68	6	350	82	86	440
7	180	84	144	70	7	240	80	104	70	7	346	90	128	420
8	172	89	134	69	8	240	84	134	70	8	348	90	134	428
9	185	93	130	66	9	204	86	130	66	9	350	91	140	440
10	184	92	132	64	10	222	88	140	65	10	352	92	160	460
11	234	94	156	62	11	184	86	144	63	11	355	80	158	460
12	193	84	150	60	12	190	90	146	63	12	348	88	156	462
1	190	78	144	58	1	192	82	144	60	1	330	90	148	468
2	184	82	146	60	2	200	80	142	58	2	327	88	144	450
3	178	78	140	60	3	220	82	140	60	3	320	86	140	456
4	170	76	138	60	4	190	78	140	62	4	320	86	148	440
5	212	90	150	62	5	188	78	142	60	5	326	88	160	442
6	204	92	152	64	6	190	88	144	62	6	330	90	156	450

IV.—RESULTS COMPARED.

–	Tar Made per Ton.	Gas Made per Ton.	Illum. Power.	Sperm Value.	Coke Saving.
	Gals.	Cub. Ft.	Candles.	Lbs.	Per Ton.
I. Ordinary arrangement. . . .	13¾	9,150	16·8	527	..
II. Stand-pipe enlarged . . .	10¼	9,300	17·5	634	..
III. Ditto, and bench front covered .	10¾	10,750	19·9	733	33 lbs.

Temperatures marked 1, 2, and 4 refer to atmosphere; and those marked 3 are for gases. The points at which these were taken are shown on fig. 2.

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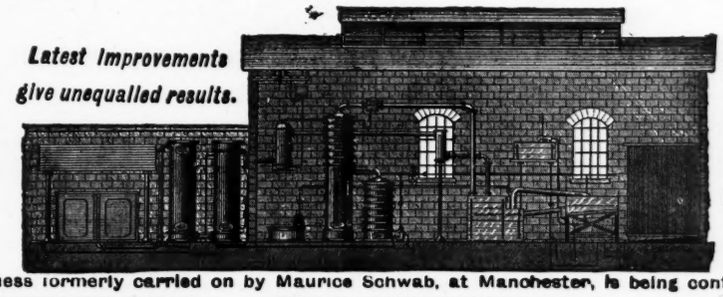

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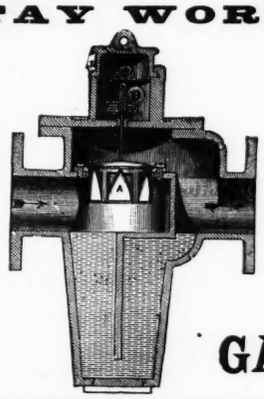

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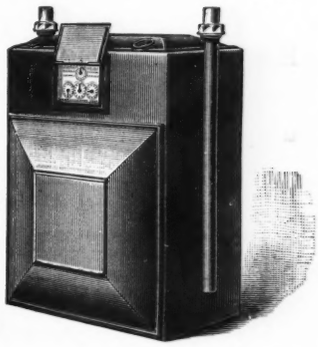

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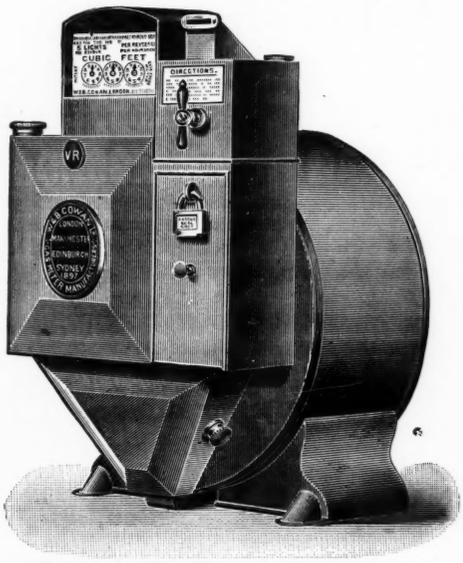

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The temperatures given in the various tables are actual thermometer records. My reason for giving them is to show the effect of temperature on the quantity and quality of the gas, and on the quantity of tar deposited in and beyond the hydraulic main. In ordinary retort-house conditions, these temperatures fluctuate and do much harm, and control of temperatures by chimney draught or by valves let into the bench covering could, with careful working, mean better and more gas, more coke sold, no worry with choked pipes, and much better working conditions for stokers.

Discussion.

The PRESIDENT said he had to congratulate Mr. Waddell on bringing forward his most interesting paper. It was one of those papers which improved as time went on. Mr. Waddell's results had been most successful; but he (the President) presumed that if his suggestions were worked out in a practical manner, even more startling results than those named would be obtained. Mr. Waddell referred to choked ascension-pipes. These were not quite common things in Scotland; but years ago he did have a little trouble in this way, and he found that by constructing the ascension-pipe so that there might be about 6 inches of an incline (either inwards or outwards), all tendency to the choking of the ascension-pipe disappeared. Perhaps other circumstances had changed; but his firm opinion was that the disappearance of chokes was due to the condensing hydrocarbons coming down the one side of the ascension-pipe only, instead of spreading round about and becoming deposited until the pipe was carboned up.

Mr. A. YUILL (Alloa) thought there were one or two points on which it would be better to have a little information. In the table of results given, they would find that 10¼ gallons of tar were obtained per ton of coal, with 9300 cubic feet of gas, of 17·5 candles illuminating power. But with the stand-pipe enlarged, and the front of the bench covered, the make of gas was increased to 10,750 cubic feet, the tar to 10¾ gallons, and the illuminating power to 19·9 candles. The sperm value was also raised. He did not see where they could have this increase, because they all knew that if they increased the quantity of gas per ton of coal they had a factor that was raising the sperm value of the gas; but in raising the sperm value, they were decreasing the other factor—viz., the illuminating power. In this case, the illuminating power was raised 2·4 candles. Now, they knew that if they gained in volume, and if they increased the illuminating power, they might get the increases from the distillation of the tar; but in this case the volume of the tar was also increased. Consequently, they did not get both the illuminating power and the volume from the tar. What struck him was where the increased volume had been derived, because if the increased volume resulted from higher heats, they all knew that it would be at the expense of the illuminating power. Perhaps Mr. Waddell might enlighten them on this point. The diagram, fig. 2, showed a hood on the top of the bench. He formed the opinion that there would have been a better command of the heat if they took up the front building in line with the front of the retort—still retaining the hood on the top of the bench, because, by the arrangement shown, they were increasing the velocity of the current, robbing the heat of the ascension-pipes, and taking it from the primary air. Did Mr. Waddell not think that, were he not creating any current in front of the retort-bench, he would be able to raise the temperature of the ascension-pipes still more?

Mr. WADDELL: Certainly.

Mr. YUILL: Then what is the use of the building in front? Continuing, he said he knew that, in his own case, he was able to get the primary as well as the secondary air heated as high as he needed it, by the products as they left the setting.

Mr. A. WILSON (Dawsholm) thought they were all indebted to Mr. Waddell for the trouble he had taken in getting up his paper. He did not think this was the first time he had seen the front of a retort-bench jacketed; but it was always more with the idea of keeping in the heat. He presumed that Mr. Waddell was trying to get some benefit from the heat that would otherwise go to waste. The results he obtained were certainly very striking. He did not know whether it was possible to get the same results in practical working. There was always such an amount of movement in retort-benches that he thought it would be very difficult to keep a jacket tight. At the same time, from the results given in the paper, there seemed to be something in the suggestion; and perhaps it would be worth while carrying on the experiment a little further, and seeing what might come of it. He was very glad to see that Mr. Waddell had the time to go in for experiments of this sort. They could not all go in for them; and they were certainly indebted to those who did.

Mr. J. WHYTE (Seaham Harbour) said last winter he was engaged in making similar experiments in the heating of the air; and he had difficulty in getting a friend to acknowledge that it was possible to do what was done, until he saw the results.

Mr. WADDELL said he was rather sorry that there had not been more discussion on his paper. Mr. Yuill's remarks did not bother him in the least, because this idea had only been matter of experiment with him. He thought there might have been further suggestions as to whether the ideas he had put forward were practical or not. When he put the bench down at Forfar, he utilized a flue running alongside the waste-gas flue for the heating-up of the primary air, and used it for a year or two. It was very hot, and certainly he thought the hotter they could get their primary air the better, because, if they were putting in air at 50° Fahr., instead of 500° Fahr., they would certainly be dropping a great deal of heat. As to the heat that, in the meantime, was allowed to go to waste, whose retort-house did they go into on a winter night, and did not find a draught which sometimes made the surface of the bench walls quite cold? At least, he knew that it was so in his retort-house; and he knew houses which were worse than his. They would even find a draught between the back of the bench and the back wall of the retort-house. The air, as it was getting away to the roof, or out through the door, was very hot; and it carried away a great deal of heat from the retort-bench. If two objects placed near each other were interchanging heat, the interchange would be the greater the more the difference between the two. The colder the air that impinged against the bench front, the quicker would the bench give up heat to the atmosphere. It was on these lines that he commenced. He felt convinced that there was a lot of heat which was not under control. It did not matter what kind of night they had, the retort-bench was always very much hotter than the atmosphere. The atmosphere coming in contact with the bench, got heated up; and as soon as it did so, the heat rushed out by the ventilator. One of the points Mr. Yuill brought up was the having of a hood on the top without a covering on the bench front. He (Mr. Waddell) did not think that would do very well, because he had had it tried. If they put a hood there without a jacket, the air would go up the front of the bench the same as now; but it would just curl out at the top of the hood, and go right away back over the hood. The current was, as far as he could find, not very much less in the one way than in the other. The arrangement he had shown did not mean that there was very much air going up. It only meant the quantity that was drawn down by the chimney; and therefore it was under control. As to the sperm value of coal, Mr. Yuill was no doubt quite right about the ton of coal having just a certain sperm value; but let them take what they got from the ton of coal, and he was told that in an oil-works they got about twice as much sperm value from coal as they did in a gas-works.

Mr. YUILL said, to make the matter clear, he could mention that it was now a recognized fact that the lower the temperature (within a certain ratio) at which they distilled coal, the higher the sperm value obtained. Consequently, in oil-works they got a higher sperm value. But in this case they were raising the temperature by covering the front of the bench; and yet they were getting a higher sperm value. They were going contrary to the results obtained in oil-works, where shale was distilled at a much lower temperature. It was a recognized fact that the lower they distilled coal or shale, within (say) a maximum and a minimum, a higher sperm value was obtained. Mr. Young had placed this very clearly before the Association on several occasions.

Mr. WADDELL said that was so; but he thought that Mr. Yuill was going a little too far in saying it was a recognized fact. However, he did not think it touched the point he was at. They knew very well that if they distilled coal at a very low heat, they obtained a great quantity of tar; and they did not get a rich gas. A certain shale he knew of, if distilled in a practical plant, gave about 11,000 cubic feet of 32-candle power gas; and this same shale, if distilled at a lower heat, gave about 9500 cubic feet of 28-candle gas. In his paper recently to the Gas Institute, Mr. Young said that if they distilled coal in a heated atmosphere, better results were obtained. Mr. Wilson was not very sure whether his arrangement could be applied practically to a retort-bench. Neither was he himself; but he believed that something to prevent the front fittings of the retort-bench from getting so cold would do a great deal of good. He knew that he was constantly troubled (with the large ascension-pipes which he had) with tar in the mouthpieces, in very cold weather; and he had no doubt but that, if there were sufficient heat at the mouthpieces, if that could be turned into gas, it would be so much extra gas, and very rich gas. The Peebles process was just that. They took the tar out of the coal, and put it into the tar-well. The Peebles process was just a lot of heated tubes, in which the tar was kept. An ascension-pipe, if made big enough, would be a retort—it would be a vertical retort; but that did not matter if they put a sufficient amount of heat round the pipe. He was rather surprised to hear one who had worked the Peebles process—both with oil and, he supposed, tar—speaking as Mr. Yuill did; because, as he said, by putting a higher heat round about the ascension-pipes, they were practically making the Peebles process out of their retorts and their ascension-pipes. However, this was but a little experiment of his. He read the paper to get some suggestions; and he thanked the speakers for what had been said about it.

Readers of the "JOURNAL" are familiar with the name of Mr. HENRY C. REW, of Chicago, in connection with his process for the manufacture of carburetted water gas by one operation and in a single apparatus, as carried on at the Cicero Gas-Works, Chicago, and also in Kansas City. Mr. Rew, who is an entirely self-made man, passed his early years, up to the age of eighteen, at Newark (N.J.). As his life-work has been attended with success, he is about to permanently associate his name with that place by presenting it with a free public library, thoroughly equipped, at a cost of about £2000, on condition that it will henceforth be maintained at the cost of the inhabitants.

CORRESPONDENCE.

[*We are not responsible for the opinions expressed by correspondents.*]

Mr. Francis Jones's Tests of the Air of a Room.

SIR,—I fear you would not be willing to grant me space to say all I could in reply to the review, in the "JOURNAL" for the 31st ult., of my pamphlet on "The Air of Rooms." But, with your permission, there are a few points on which I should like to say a word.

Your reviewer asks: "If it be granted that there is a point at which the natural consequences of the absence of adequate ventilation in the case of occupied, warmed, and lighted rooms become injurious to health, what is the nature of the danger, and to what should it be ascribed?" In answer to this question, I must refer him to the work of Carnelly (which he appears to notice with approval), who has determined not only the amount of the carbon dioxide given off in breathing, but the number of organisms which accompany it, and which are well known to be more injurious than the carbon dioxide itself. He and other chemists have stated, as the result of their researches, the maximum amount of carbon dioxide which they consider consistent with healthy conditions of breathing. That maximum varies from 6 to 13 parts in 10,000 parts of air; and I have adopted the higher limit because I consider the lower one to be practically unattainable. Now, with a coal fire and electric light in use, I found the average amount of carbon dioxide in the evening to be 9·892 parts in 10,000; while with a gas-fire and electric light it reached 14·513 parts. I may be wrong; but just as I prefer country air, with 3 parts of carbon dioxide in 10,000, to the best town air, so I prefer the air of a room in which the amount of carbon dioxide is as low as possible.

As regards the amount of carbon dioxide in different parts of the room, I lay no claim to the discovery that the best air is at the floor and the worst at the ceiling. This has been affirmed by many observers; and my own experiments support the view. Although not referred to in my pamphlet, I have made similar experiments in ordinary rooms, and with the same result.

Your reviewer picks out two or three exceptional results, as that on a fine, bright December day the amount of carbon dioxide was much higher than on a foggy one a few days later. Quite so; and it was in order to obviate contradictory results of this sort that I considered it necessary to make a very large number of experiments. Two or three determinations of carbon dioxide prove little or nothing; the *average* of observations extending over a month is a very different matter. The reviewer complains that no temperature observations were made. This is not so; ten or twelve readings of the thermometer had to be made daily both for the humidity and Pettenkofer tests. It would have been inconvenient, and I think useless, to record so many temperature observations in the pamphlet. They are preserved in my note-books, and, if really needed, can be readily given.

I quite agree with your reviewer that "a reasonable requirement in regard to ventilation is that every inmate of a room shall have a fresh air supply of 2000 to 3000 cubic feet per hour." But I wish to ask him if he thinks that, "looked at from the point of view of the practical person," this requirement is usually to be found in the ordinary kitchen, or still smaller scullery, in which the gas-stove is frequently found? I do not agree with him in suggesting, as the remedy for the bad effects of the gas-stove, the opening of the window and the door. Is this scientific ventilation, which has been defined as "keeping the carbon dioxide in a room as nearly as possible at 5 volumes in 10,000 of air, *without producing a draught?*"

I wish only further to say that nowhere in my paper do I state that the door of the laboratory was kept shut. This was not possible; and, indeed, I point out (p. 7) that the opening of the door was sufficient to cause a marked difference in the results. Hence the necessity for making a large number of observations, and relying on the *average* result.

Manchester, Aug. 4, 1900. FRANCIS JONES, F.R.S.E.

[We have nothing to retract from what we have said in condemnation of Mr. Jones's method of experimenting. Now we notice he introduces a fresh question—that of the number of "organisms" in a polluted atmosphere. But gas-burners do not create organisms. We object altogether, not as he says to "two or three exceptional results," but to his Procrustean style of referring everything to the conditions prevailing in a "laboratory" about 10 feet square, and calling this an investigation into the "air of rooms."—ED. J.G.L.]

The Absorption of Naphthalene by Indiarubber.

SIR,—Our attention has been called by Mr. J. W. Morrison to the fact that india-rubber tubing absorbs considerable quantities of naphthalene from gas, and that a length of from 18 inches to 2 feet of such tube is sufficient to remove the whole of it from gas containing from 6 to 10 grains per 100 cubic feet, when passing at the rate of 0·5 to 1 cubic foot per hour. Our own tests have confirmed this; and it is therefore necessary to avoid india-rubber tubing as far as possible in making tests for naphthalene by the method we have recently described. The connection to the test-bottles must be made with glass or metal tube; rubber being only used for the actual joints—the ends of the tubes thus joined being placed as close together as possible. This method was adopted in the case of the results already published,* as it was thought that rubber might have some absorbent action on the naphthalene, and cause too low results, although it was not anticipated that it would effect anything like the complete removal of the hydrocarbon.

The action of rubber on naphthalene is interesting also, inasmuch as it may perhaps afford an explanation of the fact recorded by Mr. R. W. Allen, in his paper read in February last, that Professor F. D. Brown was unable to detect anything but traces of naphthalene in gas leaving the works at Auckland, New Zealand, at a time when great trouble was being experienced with it in the district of supply. It is not unlikely that Professor Brown used india-rubber tubing for the connection from the gas supply to the test apparatus, and that this removed all the naphthalene before it reached the solution used for its absorption.

HAROLD G. COLMAN.
JAS. F. SMITH.

Saltley and Halifax Gas-Works, Aug. 6, 1900.

* See "JOURNAL," Vol. LXXV., p. 798.

PARLIAMENTARY INTELLIGENCE.

HOUSE OF LORDS.

The session was prorogued by Royal Commission last Wednesday, by which day the following Bills in which our readers are interested had passed their final stages and received the Royal Assent: Airdrie, Coatbridge, and District Water Trust Bill, Barnsley Corporation Bill, Bradford Corporation Bill, Bury and District Water (Transfer) Bill, East London Water Bill, Exmouth Urban District Water Bill, Falkirk and District Water Bill, Falkirk Corporation Bill, Gas Orders Confirmation (No. 1) Bill, Gas Provisional Order (No. 3) Bill, Glyncorrwg Urban District Council Gas Bill, Hartlepool Gas and Water Bill, Hemel Hempstead Corporation (Water) Bill, Lambeth Water Bill, Margate Corporation Bill, Metropolis Gas (Prepayment Meter) Bill, Mid-Kent Water Bill, Morley Corporation Bill, Mountain Ash Water Bill, Oldham Corporation Bill, Paisley Water-Works Provisional Order Confirmation Bill, Perth and Paisley Gas Provisional Orders Bill, Portland Urban District Gas Bill, Rickmansworth and Uxbridge Valley Water Bill, Rotherham Corporation Bill, St. Albans Water Bill, Salford Corporation Bill, South Metropolitan Gas Bill, Spalding Urban District Council (Water) Bill, Walsall Corporation Bill, Wandsworth and Putney Gas Bill, Water Orders Confirmation Bill, Westgate and Birchington Water Bill, Wolverhampton Gas Bill.

HOUSE OF LORDS COMMITTEE.

Thursday, July 19.

(*Before the Earl of* CAMPERDOWN, *Chairman; the Marquis of* BATH, *Earl* TEMPLE, *Lord* DE RAMSEY, *and Lord* MONK BRETTON.)

LONDON COUNTY TRAMWAYS (NO. 2) BILL.—THE RIGHTS OF GAS AND WATER COMPANIES.

This Bill, which was to empower the London County Council to employ electricity as a means of traction on the tramways which they now control, or may hereafter control, was considered by the above-named Committee of the House of Lords. A report of the proceedings when the measure was before the House of Commons will be found in Vol. LXXV. of the "JOURNAL," p. 812.

Mr. POPE, Q.C., Mr. FREEMAN, Q.C., and Mr. DU CANE appeared for the promoters. The petitioners were represented as follows: Lambeth Water-Works Company, by Mr. PEMBER, Q.C., and Mr. CLAUDE BAGGALLAY, Q.C.; the Lambeth Vestry, by Mr. WHEELER, Q.C.; the South Metropolitan Gas Company, by Mr. CASTLE, Q.C.; and the Wandsworth Board of Works, by Mr. E. F. VESEY KNOX.

Mr. FREEMAN, in opening, said at present there were 115 miles of tramways in the Metropolis, of which the County Council had already purchased 72 miles; and by 1903 they would have acquired nearly all the rest. Power was being sought, under another Bill which would come before the Committee, to couple up all the trams in London into one system; and it was very desirous that they should all be worked as one. There were practically three ways in which electricity could be applied to trams—the overhead trolley, the conduit, and the surface-contact system. The overhead system was very disfiguring; and it had been decided that it should not be used in London, except with the consent of the local authority. The conduit system had been tried with marked success, and, though it involved considerable interference with roads, once laid it worked smoothly and without inconvenience. This was the system the Council proposed mainly to adopt. The surface-contact system would be laid in certain parts of London, to see how it worked. Dealing with the petitions of the Water and Gas Companies, he said they raised two points. First, they were very much afraid of the action of electrolysis upon their mains. The answer to this was that there had been inserted in the Bill all the Model Clauses which had been drawn up by the important Committee presided over by Lord Cross, who sat on this question of electrolysis in 1893, and recommended these clauses for insertion in all Bills dealing with electricity. If there was to be an alteration in the clauses, it should only be made by a similar Committee, and not by a Bill dealing with a comparatively small length of line. Then the Companies asked that in all cases they might do the road work themselves. This, however, was a matter to be settled on clauses. There were a large number of Gas and Water Companies in London who were affected by the Bill; but only two of them appeared in opposition. He did not know whether the Companies present claimed to represent the other Companies.

Mr. PEMBER said he was authorized to intimate that the Lambeth Company's was taken as a test case.

Friday, July 20.

Sir *Alexander Binnie*, Engineer to the Council, was called in support of the Bill. With regard to the proposal of the Gas and Water Companies, he said the mode of dealing with pipes in the Metropolis had worked very well; and he saw no reason to interfere with the present general law on the subject.

Cross-examined by Mr. CASTLE: He was not prepared to give a clause that the Gas and Water Companies should be able to do the work themselves. Under the present system, if interferences with the streets by road authorities were carried out by an indiscreet engineer, there might be very serious consequences. As a matter of fact, the Council never dreamed of doing such work themselves; the practice was to consult with the Engineer, and then to permit the Companies to do the work. He did not see much objection to legalizing the practice.

Mr. *J. W. Benn*, Chairman of the Highways Committee of the London County Council, also gave evidence in support of the scheme.

Cross-examined by Mr. CASTLE: As a matter of policy, he did not agree that there was no objection to legalizing the practice with regard to dealing with roads. The existing law afforded sufficient protection to the Gas and Water Companies. The Model Clauses should not be departed from.

Professor *Kennedy* gave evidence regarding the systems of electricity to be used, &c. With reference to the question of electrolysis, he held that the clauses drawn up in 1893 by the Joint Committee of both Houses of Parliament would afford ample protection for the Gas and Water Companies.

The CHAIRMAN: The clause in the Bill says electrical power shall be used only in accordance with the Board of Trade regulations. Therefore the Board of Trade will satisfy themselves as to whether the pipes are going to be injured.

Mr. POPE: And will make such provision as shall secure their safety if they are injured.

The CHAIRMAN: Quite so. That duty is thrown on the Board of Trade, not on us; and we are quite incapable of undertaking it.

Witness, in further examination, said he did not know of any injury done to gas or water mains by electrolysis since the Board of Trade issued the regulations which had been in force now for some years.

The CHAIRMAN remarked that, even if injury had occurred, it would have happened under the regulation of the Board of Trade; and a section of the Bill dealt with such a case.

Mr. PEMBER did not intend to say whether the Board of Trade provisions were sufficient or not, though, as a fact, he thought them insufficient. The point was that, if complied with, and the Water Companies were injuriously affected, they would get no compensation at all. His case was that there was danger of accident; and he asked for protection, so that if accident did occur compensation should be given.

Mr. PEMBER (in cross-examination): Are you prepared to say that the Board of Trade regulations are perfect, and absolutely stop all danger of electrolysis?

Witness: I cannot say they are perfect; but I think they practically prevent danger. They have been in actual use for a good many years; and I have not heard of any case of accident to pipes.

Are you prepared to say that electrolysis may not be going on now undiscovered? It would not be discovered till it had got to a serious point?—It is not discovered at once; but a good many years have elapsed.

Until the escape of water became very serious, the Water Companies would not discover the damage; that would be so, would it not?—Yes.

And when it was discovered, it would be a very expensive matter to set it right?—Yes; if the pipes were seriously damaged.

Would it be clear to what cause the damage was attributable?—In most cases.

You admit that the amount of electrical tramway work done in England is comparatively slight?—Yes.

It is very much larger in America?—Yes.

And there a great deal of damage has been done?—A great deal; but the electrical arrangements were laid down without the consent of the Board of Trade—that is a mild way of putting it—and without any control at all.

That is to say, what has happened in America is no test of what would happen under the Board of Trade regulations in England?—That is so.

At the present moment, are not the Corporation of Manchester seriously apprehensive that the working of their tramways has caused great damage by electrolysis in their own water-mains?—I did not know that.

Cross-examined by Mr. CASTLE: Electrolytic action was caused by electricity which had escaped meeting water and a pipe, in which case the water would be decomposed, and the oxygen would attack the iron and eat through it. If this occurred, it might cause great danger to the community. He did not think there was danger of fusion occurring by contact of unprotected wires and pipes. The Council were taking power to adopt any system of electricity which the Board of Trade might sanction—among them that of uninsulated returns; but that system, he was almost sure, would not produce electrolysis. Under the Board of Trade regulations, a certain amount of leakage of electricity was permitted; but not sufficient to produce electrolysis.

Mr. CASTLE: Seeing that you are asking for powers which may produce electrolytic action on our pipes, and seeing that you are working under regulations which you say are not absolutely perfect, do you see any reason why you should not give us compensation if you do us injury?

Witness: I have considered the question. The point is that we, as Engineers, have to work and to construct our system according to particular rules and regulations devised by skilled persons—officers of the Board of Trade; and we think, if we carry out these things which are prescribed, and are looked after in carrying them out, we should not be held liable for further consequences.

The CHAIRMAN: That is perfectly right as regards yourselves; but the question is whether the persons who employ you ought not to be liable.

Witness: I meant the owners of the tramways.

The CHAIRMAN: You think that, having done what the Board of Trade asked them to do, they ought to be free from further consequences, even though the result of their operations may be that the pipes are injured?

Witness: That is my view, because the Board of Trade have power at any time to strengthen their regulations.

Mr. CASTLE: I think you are going too far. You are bound to lay these tramways under the existing Board of Trade regulations; but they have no power over you in the future.

Re-examined: He held that the Council ought to be exempt from the results of working under the regulations of the Board of Trade, providing they would not be negligent. Lord Cross's Committee of 1893 found that the danger from fusion or electrolytic action appeared to have arisen from a faulty system of constructing electric tramways; and they were of opinion it could be reduced by improved methods of construction so as to be practically negligible. They recommended that the Board of Trade should make regulations accordingly, and such regulations were made.

This closed the case for the Bill.

Mr. PEMBER then addressed the Committee for the Lambeth Water Company. He did not ask them to alter the regulations, but merely to amend the provision that whatever might be the injury which might arise from working a tramway under the regulations of the Board of Trade, the tramway company or authority should not be liable. The Water Company naturally were in possession of the roads first; and if the tramways did them any harm, they, as the later comers—the aggressor so to speak—should compensate the Water Company.

Monday, July 23.

Mr. CASTLE said there were one or two points on which he wished to address the Committee for the South Metropolitan Gas Company. His clients were asking for protection from damage which might accrue to them under peculiar circumstances. This was the first Bill in which Parliament had been asked to delegate its powers to a Department of the Government, without retaining any sort of control. The suggestion in clause 3 was that in future the County Council should act, in connection with the system of electric traction to be used on these tramways, with the consent of the Board of Trade. The matter of tramways was very much like that of light railways, which in turn were similar to the question of the construction of ordinary railways. If anyone had had the audacity to come before Parliament, and ask to make a railway—say, from London to York—on such and such a system, and according to such a method as the Board of Trade, apart from Parliament, might consent to, Parliament would have made short work of the request; and yet this was what was being asked in the present Bill. Even when the Board of Trade permitted a scheme to be carried out under Provisional Order, it was always the rule that the Order should be confirmed by Act of Parliament. But here they were asked in a most extraordinary way to deal, not with what the Board of Trade had already done, as in the case of a Provisional Order, but with what the Board of Trade might do in the future.

The CHAIRMAN: Your contention is that the ordinary practice is at present for the Board of Trade to sanction an electric system, and for the matter subsequently to come before Parliament for confirmation.

Mr. CASTLE said that was the arrangement he wished the Committee to make in this Bill. If the Board of Trade authorized a system, the opponents should be able to come to Parliament and say that the Board of Trade had erred; and the question should be reconsidered by Parliament. The County Council came there, and asked that what the Board of Trade might sanction in the future should have all the authority of an Act of Parliament. This would not be allowed in the case of any Railway Company making their own lines. For this reason, he asked for protection.

The CHAIRMAN: What is it you are asking for?

Mr. CASTLE: I ask for the same clause as Mr. Pember.

The CHAIRMAN: I thought you were going to ask for a clause saying that the electrical system selected by the Board of Trade should require to be confirmed by Parliament as in the case of a Provisional Order.

Mr. CASTLE said he was asking for the compensation clause which Mr. Pember contended for, and obtained. There were special reasons in this case why they should have it. The County Council in these matters should not be allowed to shelter themselves behind the Board of Trade. In an ordinary case, Parliament would object to persons coming with an ill-digested experimental scheme, and would insist on the whole matter being put before them.

The CHAIRMAN: Do you want us to throw out the Bill on that argument, or simply to insert a compensation clause?

Mr. CASTLE said a compensation clause was all he asked for.

The CHAIRMAN: Then you do not appear against the preamble of the Bill?

Mr. CASTLE: Yes; if the compensation clause is not inserted, I ask that the Bill shall be thrown out. The promoters are seeking to introduce any electrical system which the Board of Trade may desire. There are three systems. First the trolley——

The CHAIRMAN: That system is barred by the Bill. Besides, we have had all three systems gone into; and I do not think you need repeat them.

Mr. CASTLE said that all the objections to the trolley system applied equally to the surface-contact system. His point was that this was an exceptional Bill, framed in an exceptional form; and he asked that it might not be passed without a compensation clause.

The CHAIRMAN: You do not offer evidence?

Mr. CASTLE said he did not; but he might have to call witnesses as to the Council doing their own work, if the Bill were allowed to proceed.

Mr. WHEELER, in addressing the Committee for the Lambeth Vestry, said the Bill raised the question of the control of the roads and streets in London. By the Metropolis Management Act of 1855, and subsequent Acts, the public streets were placed under the control of the London Vestries. The present Bill sought to repeal what was the general law of the land; and he asked the Committee to say that, in a Private Bill of this character, this should not be done, as it would be inconsistent with the general practice of Parliament.

The CHAIRMAN (after deliberating in private with his colleagues, and without calling on Counsel for the promoters) said the Committee had decided that the Bill might proceed.

The Committee then commenced the consideration of clauses.

On clause 4, which provides that the Council shall take all reasonable precautions in constructing, placing, and maintaining their electric lines, and so conduct their undertaking as not to injuriously interfere by electrolytic action with any gas or water pipes.

Mr. PEMBER submitted, as an addition—"and the Council shall make full compensation to any company or person suffering loss or damage by reason of any such fusion or electrolytic action as aforesaid." His point was that the County Council were the aggressors; that the Gas and Water Companies were in the roads first; that their business was quite as important as, if not more important than, that of the County Council in regard to the trams, from the public point of view; and that those who caused the damage should suffer—not those who bore the damage. Lord Cross's clauses were good, as far as they went; but, however careful the Board of Trade might be in framing regulations and carrying them out, damage might arise, and if it did, the proper people—the County Council—ought to pay. It was not desired to stop the County Council, but only to make them pay for any damage they might cause.

Mr. BALFOUR BROWNE said he understood the decision of the Committee on this Bill would regulate their decision on the following Bill, in which the same point was raised.

The Chairman remarked that this must not be taken for granted.

Mr. Balfour Browne said he appeared for the Great Northern Railway Company; and he entirely concurred in Mr. Pember's statement. What the Railway Company feared was that these wires of the County Council might be blown, or otherwise caused to fall, upon the signalling wires of the Railway Company. If they did, surely the County Council ought to pay for the damage.

Mr. Castle also agreed with what Mr. Pember had urged.

Mr. Pember said the question was whether the Committee would, or would not, legalize a Bill with a clause in it distinctly stating that, if the promoters did certain things—viz., obeyed the regulations of the Board of Trade, which might themselves be insufficient—they should then escape all danger for liability to his Company's water-pipes which they might injure, or to his learned friend's signal wires.

Mr. Pope said this was a much more important point than it at first appeared. It was an attempt, for the benefit of one Water Company, one Gas Company, and one Railway Company to alter the law which regulated all such undertakings. The law was that if Parliament chose to give statutory authority for the exercise of certain powers, so long as those powers were exercised without negligence, there could be no liability for damage. The Committee had already decided that statutory power should be given for the creation of electrical traction, subject to the regulations of the Board of Trade—those regulations being incorporated as part of the conditions of the statute; and if anybody obtained these powers at the hands of Parliament, and exercised them in conformity with the regulations of the Board of Trade, and was not guilty of negligence in carrying them out, no claim for damages could arise. There ought not to be inserted any provision for damages for the benefit of one Gas Company and one Water Company.

Mr. Baggallay pointed out that this was an error, because the Lambeth case was a test case.

Mr. Pope said in that case he would put the proposition in another way—viz., that for the benefit of the Gas and Water Companies of London the Committee were to alter the general law in regard to the power of an undertaker who used his statutory authority without negligence. The clause would make the County Council, if they used without negligence the power the Committee proposed to give them, liable in any event to pay for damage done. The evidence was that there was no imminent danger of the kind, and that the Board of Trade regulations were sufficient.

The Chairman said it had not been proved that the regulations were sufficient, while it had been admitted that they might be imperfect.

Mr. Pope said the whole of this question was threshed out before Lord Cross's Committee, with the assistance of all the Water and Gas Companies, and the result was that the Committee made a report in which they said that, with proper regulations made by the Board of Trade, the whole danger might be a negligible quantity. The Committee suggested, as a clause to secure proper regulations, one to the effect that the undertakers should adopt all reasonable and proper precautions in constructing, placing, and maintaining electric lines, and should work them so as not to interfere with the operation of any wire, line, or apparatus of other persons using electric power. This met the case of the Railway Company. Then it was provided that the undertakers should be deemed to take such reasonable and proper precautions as aforesaid, if and so long as they adopted and employed, at the option of the undertakers, either insulated returns or uninsulated mechanical returns of low resistance, and such other means of preventing injurious interference as the Board of Trade might direct. Therefore Lord Cross's Committee, after hearing all parties, recommended that the clause should contain a compliance with the regulations of the Board of Trade, which should free the undertakers from any charge of negligence. The amendment now sought really meant that, where undertakers were simply using statutory powers without negligence, they should, contrary to the general principles of law, be held liable for the exercise of those powers. This would be a total reversal of all legal principles, and of all Lord Cross said.

Mr. Baggallay remarked that Mr. Pope had been referring to the report of the Committee of 1893. But before Lord Cross's Committee of 1898, Sir W. Preece gave evidence; and, as a result, that Committee directed attention to the observations he made as regarded the difficulty arising from the working of tramways by trolly wire—his suggestion being that a strong control clause should be carefully considered. Nothing, however, had since been done. His (Counsel's) sole position was that, if the Board of Trade made efficient regulations, and they were obeyed, the amendment would not hurt the London County Council. If the provisions made by the Board of Trade were effectual for the prevention of electrolysis and fusion, the County Council would incur no liability. It was only in the event of those regulations proving ineffectual, and damage resulting to his clients, that they would be liable. In such a case, he contended that, as between two parties, one being wholly innocent, and the other, however unintentionally, the cause of mischief, the latter should pay.

Mr. Castle said if power were given to a corporation by an Act, and no conditions were attached, it was very clear negligence must be proved before the corporation became liable. The whole question was whether the Committee would give statutory powers to the County Council which would grant them immunity, or whether they would attach as a condition to their decision a proviso that they should be liable. Were the conditions such that the County Council should be able to shelter themselves behind the Board of Trade regulations?

The room was then cleared, while the Committee deliberated in private. On the re-admission of the public,

The Chairman said: The Committee have decided to admit the principle of the clause.

The parties then proceeded to consider the clause in detail. In the course of the discussion which followed,

Mr. Pope suggested that the County Council should be bound to take all reasonable precautions in the working of the undertaking, so as not to affect gas and water pipes. If they did not take such precautions, they should be liable; if they did, they should not be liable.

Mr. Baggallay asked if that was not going back on the decision of the Committee. It would be taking all reasonable precautions if the Council were to follow exactly the regulations of the Board of Trade; but if those regulations proved ineffectual, the Companies would suffer damage and get no remedy.

Mr. Pope: In other words, my friend says: "You shall take all reasonable precautions, but shall be liable, whether you take them or not."

Mr. Castle: Yes.

The Chairman: That is it.

Mr. Pope: The damage must be caused by our not taking reasonable precautions.

The Chairman: That is going back on our decision.

Eventually, the matter was adjourned to enable the parties to bring up a substantive and separate clause.

Tuesday, July 24.

Mr. Pember brought up the following clause to carry out the decision of the Committee regarding protection for Gas and Water Companies:—

The Council shall make full compensation to any Gas or Water Company suffering loss or damage by reason of any fusion of, or electrolytic action on, their mains, pipes, or apparatus, which may in any way be caused by the Council in the exercise of any of the powers conferred upon them by this Act.

A long discussion followed.

Mr. Pope said the effect of the clause would be to make the Council the insurers of the gas and water pipes of the Metropolis from any electrolytic action arising from any cause whatever. Though possibly this matter was not one of very great pecuniary consequence to the Council, because they did not propose to use a system which could result in electrolytic action, as a matter of principle the question involved was very important—being to what extent the Committee would alter the general law in this particular case. What difference was there between these and any other statutory powers involving, it might be, some amount of damage, which could or might be avoided by reasonable precautions? If the damage could be avoided or prevented by reasonable precautions, every such precaution ought to be laid on the Council; and if every reasonable precaution was not used, whether under statutory power or the common law, the Council should be responsible. But they should not be liable if, using every precaution and effort to avoid the damage, Parliament had satisfied itself that the risk of damage was so slight that the liability ought not to attach to the exercise of statutory powers.

The Chairman said the intention of the Committee was not, by giving the County Council statutory power, to exempt them from anything which they would have been liable for otherwise in law—anything in regard to which they would have been liable if this Bill giving statutory powers had not been passed.

Mr. Pope said if that was the view of the Committee, it was directly contrary to his argument. He would suggest the following clause as meeting the justice of the case:—

If it be proved that any injury or damage to any gas or water pipes or other metallic pipes, structures, or substances of any Gas or Water Company shall have resulted from fusion or electrolytic action caused by any currents negligently generated or used by the Company for the purpose of electric traction under this Act, the Council shall be liable to make compensation to the Company for such injury or damage.

This would make the Council liable if they did not use every precaution, irrespective of the Board of Trade.

Mr. Pember submitted that the clause did not give him the protection the Committee said he should have. He did not wish to stop the Council; but he did say that, if they caused damage, they should pay.

The Chairman remarked that the Committee were anxious not to do away with any liability which the Council were under at present.

Mr. Pope, after further argument, suggested a modification of the clause he had brought up, as follows:—

If it be proved that any injury or damage to any gas or water pipes or other metallic pipes, structures, or substances of any Gas or Water Company shall have resulted from fusion or electrolytic action caused by any currents generated or used by the Council for the purpose of electric traction under this Act, nothing in this Act shall relieve the Council from any liability to make compensation for such injury or damage.

He wanted to make it clear that the injury for which they were to pay was caused by the Council, because, he pointed out, electrolysis arose in part from moisture, which might be due to carelessness of the Companies in allowing their mains to be leaky.

The Chairman: Certainly.

The clause was discussed further, and in the end was accepted by the Committee in the form last suggested by Mr. Pope, but with the addition at the end of the words "which would have existed but for the passing of this Act."

The Committee then proceeded to consider other clauses of the Bill.

Mr. Vesey Knox and Mr. Wheeler brought up several amendments for the protection of their Authorities, chiefly as to road matters; but the Committee declined to accept them.

Mr. Castle, on clause 14 being reached, proposed, for the protection of the South Metropolitan Gas Company and the Lambeth Water-Works Company, the following:—

If within seven days after a notice under the preceding section of this Act shall have been served upon any Gas or Water Company, that Company so elect, such Company shall themselves execute all such alterations to their mains and pipes as may from time to time be necessary; and the reasonable costs of executing such alterations shall be repaid by the Council to the Company; provided always that such alterations shall be carried out in accordance with the directions, and to the reasonable satisfaction, of the Chief Engineer of the Council.

By the Bill, the work was not to be done by the Companies, but under their superintendence. This, however, was not sufficient, as was shown by a recent explosion at Manchester, in which an Engineer lost his life owing to the incautious way a main had been handled.

Mr. *C. C. Carpenter*, Chief Engineer to the South Metropolitan Gas Company, was then called to give evidence in support of the amendment. Clause 14, he said, would enable the County Council to alter at any time the position of, and otherwise interfere with, the mains and pipes of his Company. This power had been possessed by local authorities since 1870, though they had not acted on it. Since 1870, the reasons against a tramway authority doing the work had increased; the conditions being now quite different from what they were then. Whereas in 1870 the tramway had the use only of the skin of the road, under the electric systems now proposed they might—as with the conduit system—sink

iron structures to a depth of 30 or 36 inches, which would interfere with a considerable number of large and important mains. His Company held that they should have control of any alterations. The tramway authority should be able to direct the removal of the mains; but the work of removal should be done by the Company. It was a dangerous thing to shift large mains; and such work was done under witness's personal supervision. Under the Bill, not only the County Council, but their contractor, and even his workmen, would have power to deal with the mains; and this would be fraught with great danger. The provision suggested had been inserted this session in three Bills; two of them being measures of the London County Council.

By Mr. FREEMAN: At present, the powers of the Gas and Water Companies and the tramway authorities in regard to this matter were regulated by the Tramways Acts, which contained elaborate provisions for the protection of the Gas and Water Companies. So far, the Company had always removed the mains, when they had required to be moved; and this had been done without difficulty, because the County Council had never interfered. He wished to alter the conditions now because the circumstances had changed.

Mr. FREEMAN said he had no desire to fight this matter in a hostile spirit. It was simply a balance of convenience. Insomuch as the County Council were the road authority, charged with the duty of relaying the tramways, they thought the matter should be in their hands; liberty to go to the Board of Trade being provided, if it were thought they suggested anything unreasonable.

Eventually, the Committee accepted the clause; but they amended it by leaving out the words "as may from time to time be necessary," which the Chairman thought might lead to litigation.

The remaining clauses having been adjusted, the Bill as amended was ordered to be reported to the House; and it received the Royal Assent on Monday, the 6th inst.

LEGAL INTELLIGENCE.

HIGH COURT OF JUSTICE—QUEEN'S BENCH DIVISION.

Tuesday, Aug. 7.

(*Before Justices* DAY *and* DARLING.)

Welsbach Incandescent Gaslight Company, Limited, v. Todd and Others.

Mr. WALTER said this was a motion for judgment in default of defence The statement of claim alleged infringement of the patents of 1885, 1886 and 1893. As the two first had expired, it was now only a question of damages; but as the 1893 patent was still in force, he applied for an injunction restraining further infringement. He also asked for delivery upon oath of the infringements, for costs as between solicitor and client, an inquiry as to damages, and liberty to apply.

Their LORDSHIPS made the order as asked.

Similar orders were made against the following defendants, the facts in each case being the same: Andrews, Courtney, Busse, Shackleton, Logan, Sinclair, Edward, Ward, and Lord.

The Queen v. The Tendring Hundred Water-Works Company (ex parte the Mayor and Corporation of Harwich).

Mr. HAMMOND CHAMBERS, Q.C., said he appeared on behalf of the Water Company to show cause against a rule obtained a few days previously why a writ should not issue commanding them to obey an order of the Local Government Board, dated 1892, to provide a supply of water constantly laid on under pressure within the limits of the borough of Harwich. The Company supplied Harwich, Walton-on-the-Naze, Dovercourt, and all the country from the sea extending over some considerable area, of which Harwich was the centre. They had a pumping-station at Manningtree, and supplied consumers direct by pipe, with this exception, that there was a reservoir at Dovercourt. The Company was incorporated under Acts obtained in 1884 and 1886. By the terms of the original Act, they were not under any liability to supply the district at any particular pressure. It was provided, however, that a consumer might go to the Local Government Board and obtain an order for a constant supply at a given pressure; and some seven or eight years ago such an order was granted. The affidavits on which the rule was obtained were very general in their terms; but the complaint appeared to be, first, that the Company did not supply water under pressure, and next that they sold in bulk to the Great Eastern Railway Company and to the training-ship *Ganges*. Section 39 of the Act of 1884 empowered the Company to enter into contracts for the supply of water in bulk so long as the domestic service was not interfered with. His answer to the rule was twofold—first, that, as a matter of law, no *mandamus* would lie; and, secondly, on the question of fact, that the Company had, for the last three or four years supplied water constantly under pressure, and that they could not do more than they were doing. If there was any defect in the supply, it was not due to the fault of the Company, but to the defective fittings in the houses of the consumers. In support of this statement, he read the affidavits of the Managing-Director and the Engineer. If the applicants had any fault to find as to the sale of water in bulk, their remedy was to apply for an injunction, and in the event of a deficient supply, they could recover penalties. But it was well established that, where a specific remedy was given by statute, a writ of *mandamus* would not lie.

Mr. BOXALL followed on the same side, and pointed out that, if a water company failed to furnish a proper supply, the public authorities had power, under the Public Health Act, 1875, to take the matter into their own hands. Here there was no specific allegation that the wells, pumping plant, or mains were insufficient, but merely a general one that there was not a constant supply, and upon this there was a direct conflict of evidence.

Mr. ENGLISH HARRISON, Q.C. (with him Mr. TINDAL ATKINSON), supported the rule, and argued that a writ of *mandamus* would lie, as there was no complete remedy provided by the Act. The rule was that the remedy must be "equally convenient, beneficial, and appropriate." It could not be said that it was an adequate remedy to fine the Company £10 for not having sufficient pressure of water in the fire-plugs, when the result might be that the whole town would be burnt down. Neither was the infliction of a penalty of 40s. an adequate remedy for a person who wanted a supply of water. He had evidence that the service in Dovercourt was intermittent and most unsatisfactory, and that during the day there was no pressure in the mains on the Marine Parade. His complaint was that the Company were supplying water at Parkeston to the Great Eastern Railway Company for their steamships, and also to the *Ganges* training-ship, which was outside the limits of supply.

Justice DAY thought the evidence proved that the deficient supply was due to the Company selling water in bulk; and he ordered the rule to be made absolute.

Justice DARLING said it had been argued that a *mandamus* would not lie because there was a remedy provided by the Private Act. But this rule did not apply if the remedy was not real. Here the inhabitants had a right to have water, while the remedies under the Act could only be put in force after the expiration of 28 days. As no other remedy was "equally convenient, beneficial, or appropriate," he thought the proper remedy was by *mandamus*.

Abstracting Money from Prepayment Meters.

At the Bolton Police Court last week, the Magistrates heard a case in which Joseph Walker was charged with having broken open a prepayment gas-meter at his house in Lode Street, and stolen therefrom 7d., the property of the Corporation. Mr. J. H. Hall, who prosecuted, said the amount involved in the case was a small one, but it was a matter of considerable importance to the Corporation, in view of the number of prepayment meters which were in use in the town, and the fact that there had been previous prosecutions consequent upon thefts of this particular character. The Magistrates found the prisoner guilty; and the Chairman, in committing him to prison for one month, with hard labour, said it was a mean theft. It must go forth to the public that such robberies would not be tolerated.

Stealing Gas at Halifax.

At the Halifax Police Court, last Wednesday, Robert Gay, described as an engineer, of Mount Street, was charged with an offence under the Gas-Works Clauses Act, 1871. Mr. W. E. Willans, who defended, put in a plea of guilty, and accepted the outline of the facts of the case given by the prosecution without calling evidence. Mr. T. M. Tordoff, Assistant Town Clerk, said the accused was charged with tampering with gas-pipes, &c., belonging to the Corporation; but the case was practically one of stealing gas. The defendant had an engineer's shop at the top of the premises in Mount Street, and had a gas-meter in the room. On the 13th of July, at 10.45 a.m., Samuel Horsfall, a gas inspector of the Corporation, called, and found the door at the bottom of the stairs locked as usual. He rang the bell, and the defendant appeared. He said to the inspector, "Oh, I am just at dinner. Will you call again?" The inspector, who began to suspect something wrong, insisted upon seeing the meter then. Gay tried to prevent him, and a struggle ensued; but the inspector succeeded in getting into the room, and discovered a state of things which explained the defendant's anxiety for him to delay his visit. The inlet-pipe of the meter and the outlet-pipe from the room were disconnected, while an india-rubber pipe was attached to the gas-main and to the defendant's service pipe; thus carrying into the room an unregistered supply of gas. In extenuation, Mr. Willans said the defendant was doing some soldering work, and, finding the pressure insufficient, brought into requisition the india-rubber pipe. He now expressed his regret for having done so. The Chairman (Mr. R. W. Evans) said the Bench thought the offence a serious one. It was a disgraceful, shabby way of stealing; and they would impose a fine of £5, with 11s. 6d. costs.

Improved Street Lighting at Bolton.—The Gas and Lighting Committee of the Bolton Corporation are at present engaged in carrying out an extensive scheme for improving the lighting of the streets by gas. Already some 300 Welsbach incandescent lamps have been fixed in the principal thoroughfares, and in the evening, when lighted up, the streets present a very fine sight. In the centre of the town, the lamps are of the double pattern.

New Premises for the Bridport Gas Company, Limited.—The Secretary and Manager of the Bridport Gas Company, Limited (Mr. J. H. Cornish), presided a few days ago at a dinner given by the Directors in the Company's new premises, which have lately been completed to his designs. The guests comprised the Company's employees, the workmen and staff of the Contractors (Messrs. Bartlett and Sons), and others, to the number of about forty; and the proceedings were characterized by much heartiness. The new premises have an attractive frontage; the ground floor, containing a large shop or show-rooms, being beautified by two handsome plate-glass windows—one filled with stoves, gas-fires, &c., and the other with chandeliers, lamps, brackets, globes, &c. A staircase leads up to the Board-room, which is spacious and lofty. On the same floor is the Manager's office; and the testing-room is a few feet farther off. The whole premises are of ample dimensions, and reflect the highest credit on the designer.

The Price of Gas at Oldbury.—At the last meeting of the Oldbury District Council, the Gas Committee recommended that the charge for gas should be raised 3d. per 1000 cubic feet as from the next reading of meters. They estimate that, with their present stocks of coal and the increased price of residuals, this advance will be sufficient to cover the additional cost for the current year; but if coal prices continue at the present level, they will have to recommend a further advance next year. Mr. J. W. Wilson, M.P., in moving the adoption of the recommendation, said the increase in the price of coal was from 40 to 50 per cent., whereas the advance of 3d. per 1000 cubic feet to all consumers, except those by penny-in-the-slot meters, was a very small one; the enhanced rate they were paying for coal being equal to 6d. per 1000 cubic feet of gas. The Committee had two things as a set off—they always kept a heavy stock of coal; and they expected to realize well from residuals. Therefore they were able to advance the price of gas practically only half what the additional cost of coal would be. The recommendation was agreed to.

MISCELLANEOUS NEWS.

SOUTH METROPOLITAN GAS COMPANY.

The Ordinary Half-Yearly General Meeting of this Company was held at the Cannon Street Hotel last Wednesday—Mr. GEORGE LIVESEY in the chair.

The SECRETARY (Mr. Frank Bush) having read the advertisement convening the meeting, and the minutes of the last general meeting, the seal of the Company was affixed to the register of shareholders, and the report of the Directors, with the accounts for the six months ending June 30 (see *ante*, p. 297), was presented.

The CHAIRMAN: Ladies and Gentlemen,—It now becomes my duty to move that the report and accounts be received and adopted, and the report entered on the minutes. The report, as usual, gives as much information as we can crowd into its compass. There are a number of important points to which I feel it necessary to direct your attention; and I can only hope that I shall not weary you. But I have this feeling at starting, that a long speech gives the impression that one has rather a bad case. Well, that is not so at all. I can assure you that we have not a bad case in any sense of the word. But these are times when I think I may say the difficulties and anxieties of those who have the conduct of gas undertakings have been greater than they have ever been on any previous occasion. Of course, the first question nowadays with all gas people is the price of coal. The report tells you that there is a precedent for this – in fact, in 1873 the price went up higher than it has done on the present occasion. But it is of no use going into the point as to the whys and wherefores of the great rise in the price of coal. There is no doubt that now, as in 1873, the main cause—not the only cause, but the first cause—of the increase in the price was the abnormal activity of the iron trade. Other things have helped, no doubt. The demand for coal for the Navy and for export has also helped to harden and to stiffen prices. But there is this satisfaction, at any rate—that the principal cause of the rise in the price of coal is passing away. There is no doubt whatever that the "boom" in the iron trade has passed the summit, and that we are now on the downgrade so far as the demand for iron is concerned; and although it is likely to be some little time before the effect is shown on the coal market, still the effect must be apparent before long. I have been referring to some old papers of the 1873 period, and I find that whereas the price of gas coal rose in the year or two before from 6s. per ton to 20s. per ton free on board in the Tyne in the spring of 1873, it began to drop soon after; and by December, 1873, it had fallen 5s., to 15s., by January, 1874, another 1s., to 14s., and by the succeeding March to 12s. I expect that, on the present occasion the price of gas coal, which reached 16s. in the spring of this year, and is still maintained at that figure, will fall before long. I do not see any reason why the precedent of 1873 should not be followed, and why the price should not come down to reasonable figures before next year is over. I certainly expect a drop in the winter. There are two facts which I think I may mention. One is that I saw in to-day's "Times" that the stocks of pig iron in America, which were 68,000 tons on the 31st of December, had increased to 342,000 tons on the 30th of June—showing that, in the United States at any rate, the supply of iron had exceeded the demand. The other fact is from our own experience. Last winter we had great difficulty in getting our supplies of coal; I think I told you at the last meeting that, whereas we had laid in a very large stock by September—much larger than we had ever had on any previous occasion at that time of the year, or on any previous occasion whatever—the contractors could not supply the stipulated monthly quantities. Though we had so large a stock in September, it had practically all gone by Christmas, and we had to go into the market and buy largely; and for three months we were hovering with just a week's stock in hand—sometimes a little less. Now, I am happy to say, circumstances have entirely changed. We made contracts last spring (about April) for six months only, as was done by the South Metropolitan Company in 1873, in the hope that there might be a fall in price before the year was out; and knowing the difficulty we had experienced in the previous six months, we arranged for larger monthly quantities than we expected we should require, as we thought it probable that the contractors would fall behind in their deliveries. However, they have not done so; and whereas in the winter six months we were put to the greatest possible inconvenience by deficiencies in delivery, now we are put to almost as great inconvenience, though of a different kind, by excesses of deliveries. We do not know what to do with the coal; we have a far larger stock than is usual. It is 162,000 tons; but at this time of the year, if we had 50,000 tons we should consider it a large stock. We have tried to dispose of some of it to other companies; but we found they are equally full, and we have been obliged to ask our contractors to delay deliveries. I think this is tolerably strong evidence that the supply of coal has now fully reached the demand; and having reached the demand, it will not be very long before it is in excess of the demand. I therefore think we may well look forward to an early falling off in the price. There is one other point about coal I should like to mention. It is often said: "You get back in products the extra price of coal." Now, for every shilling that coal rises in price coke ought to rise 2s., if we are to get back the extra cost, because we sell only half-a-ton of coke for every ton of coal carbonized. But coke does not rise to anything like that extent. During the past six months, we have had the advantage of coke at higher prices, necessitated by the general rise of coal, because the price of coke has followed the market price of coal—not the contract price, but the market price. We have only had to pay the higher price for coal during the last three months of the half year. Coal has cost us £154,000 more than in the corresponding half of 1899; but products—coke, tar, and pitch—have only brought us back £71,000. Now we are coming into the second half year, we cannot expect a very much further advance in products. So far, therefore, from getting back anything like the whole of the extra cost from the residual products, we estimate that we shall only get back from 20 to 25 per cent. of it. The next important subject in the report relates to the sliding-scale. It is a singular fact that the sliding-scale, as applied to gas companies, was brought into existence in consequence of the rise in the price of coal in 1873. It was then felt by the promoters of the movement that it was not fair that, when an abnormal rise of the kind took place, shareholders should be absolutely protected, absolutely secured in their dividend, and that the whole extra burden of the cost of coal, less the return from products, should be thrown on the consumers. Hence the sliding-scale was proposed, in order to distribute the burden; and when it was first adopted, the extra cost was shared. About three parts of the extra cost were borne by the consumer, and one part by the shareholder. The sliding-scale has continued to work on the same lines; but owing to the increase of business having been in a greater ratio than the increase of capital, the proportions now are about six parts to the consumer and one part to the shareholder, or it may be seven out of eight. The consumer, remember, has been having the advantage all these 25 years or so of the progressive savings in the manufacture of gas. We have been reducing prices gradually during the whole of these 25 years; and now that the process is reversed, and we are obliged to increase the price of gas, the consumer, having had the advantage in past years, must bear the brunt of the extra cost. The consumer will have to bear from about three-fourths to seven-eighths of the extra cost; and the shareholders will have to bear the remainder. I am quite certain of this –that let the consumers but understand this point, and they will not grumble. In proof of this, I may say that out of the 200,000 customers to whom we sent out an explanatory notice when we raised the price in March, and when we increased it again in June, in March there was not a single letter or word of objection; but there were one or two letters commending us for the manner in which we had explained the matter to them. In June, however, we had 28 letters, not complaining of the increase of price, but saying, as regards 25 of them: "You ought to have given us notice when the index was taken," instead of giving notice, as we did, when the bills were sent out. The letters are all very courteous and very civil; and that is shortly the burden of their complaint. Some of them also said we had acted very fairly. There was, in fact, no complaint at all. None of the consumers object to the increase of price; but 25 of them say: "We ought to have had notice a little sooner." We explained how the increased cost of coal would affect them; and we said: "Consumers, shareholders, and employees have been partners in prosperity; they now become sharers in adversity." I am sure you will take the matter in the same spirit that the consumers and the employees have taken it. They have all taken it in the right spirit, and have said: "We have had the smooth; we must now put up with the rough." It is a characteristic, I will not say of the British race, but of manhood generally, that when adversity or difficulty comes it brings out certain virtues which are not developed in times of prosperity—the virtues of patience, of courage, and of hope—which induce men to do their best, and to put forth exertions which otherwise perhaps they would not make. This increase in price from 2s. 1d. to 2s. 8d. per 1000 cubic feet reduces the dividend payable to the shareholders by nearly £40,000 a year, but not the dividend paid, because you, very patiently I think, put up with a deficiency of dividend during the last two or three years. You might have had a higher dividend than we were distributing; but I think it has turned out that you adopted a wise course. You were entitled to a dividend of £5 14s. per cent. on the last occasion; but you only had £5 6s. 8d. Consequently, the actual reduction of dividend will not be at the rate of £40,000 a year in the next half year, but only at the rate of £20,000 a year. It is, however, perfectly true to say that the shareholders, in consequence of the increased price, give up an amount of dividend to which they were entitled of £40,000 a year. Then comes the case of the Company's employees. We adopted, just before the strike in the year 1889, a system of profit-sharing which was simply an extension of the sliding-scale to the employees. The sliding-scale identified the interests of shareholders and consumers; and by its extension to the employees, we identified all three interests. It was to the interest of all three to reduce the price of gas as much as possible; and the profit-sharing bonus to the employees was on the basis that for every penny at which gas was sold below 2s. 8d. per 1000 cubic feet, they were to have a certain percentage on their salaries and wages. It amounted to 9 per cent. last year; the price of gas being 2s. 1d. The price having now gone up to 2s. 8d., the employees lose the whole of this 9 per cent. They do not lose merely a part of their dividend, as the shareholders do; they do not have a fraction added to the price of gas; but they lose the whole of their profit-sharing bonus, equal to 9 per cent. on their salaries and wages, and aggregating in the total £24,300. They have taken this, as I have already said, most cheerfully, and in one sense there is some advantage in it. It has often been said: "Your profit-sharing system is all very well. A concern like yours, always making profits, can always distribute a bonus; and your people will be satisfied with it. But let the time come when there is no bonus, and you will see." I never was afraid of that time. Now we do see, and what we see is that these false prophets of evil have been thoroughly and utterly wrong; and our employees in all ranks, from our chief officers down to the humblest labourer, have taken it in the spirit I have already referred to, and are doing their best for the Company just as if they were in receipt of the full bonus. I have already said that the consumers have accepted the advance in the same spirit. The next paragraph in the report, paragraph 6, says: "In all other respects, the condition and prospects of the Company have never been better." I think I may say that we are served by an admirable staff; we have a contented body of consumers; and we have an increasing business. I do not think I have ever known such an increase as this—an increase of 12¼ per cent. on the half year. A part of it is no doubt due to consumers using gas instead of coal. In the winter, when the price of coal went up, they used more gas and less coal; but notwithstanding the increased price of gas and the hot weather, the gas sold is in excess, and considerably in excess, of the quantity sold last year. This is a point which I think the shareholders may take to heart, and feel that their property was never in a more sound position than it is at the present moment. This stability is assured. The cloud will pass, and when coal returns to a reasonable price, which is certain to come to pass, their old prosperity will be renewed. I have nothing to add to, or withdraw from, this statement. Now I come to another matter—the question of the Company's Bill. It is an important subject. Last year the House of Commons appointed a Committee, called the Powers of Charge Committee, to inquire into the circumstances of the three Metropolitan Gas Companies. They gave a great deal of time to the question. A great amount of evidence was heard by them; and a very important report was issued. In this report the Committee made certain recommendations. One was that, when the Companies were going to Parliament, the initial price in the sliding scale

should be reduced. The recommendation did not act adversely to us; because they recommended that, while the initial price should be reduced from 3s. 9d. to 3s. 3d., the rate of increment of dividend per penny should be increased on our converted capital to 2s. 8d. per cent., instead of 2s., or by one-third, which is a considerable increase. This will have the effect of reducing the proportion of saving which the consumers get, while it will increase the proportion of the shareholders. They also made one or two other recommendations. One was that the southern district of the Gaslight and Coke Company should be transferred to this Company; and they also recommended that there should be some regulation of the supply of gas by means of slot meters. There were also one or two other points which did not affect us at the time. Your Directors accepted these recommendations; and I think I may tell you that one main reason for accepting them was that they thought it was a favourable opportunity of getting a very important modification of the conditions affecting the supply of gas. Parliament for many years past has been egged on by the local authorities. Whenever a gas company were going to Parliament, the local authority were sure to oppose, even in the best cases. We had an instance this year, in the case of the Wandsworth and Putney Company—a small Company supplying gas at as low a price as ourselves, and even lower now, because they have not raised the price to the extent we have. They were supplying gas at 2s. 1d., and they wanted fresh capital; and the opposition to that was just as strong as if they had been charging 3s., instead of 2s. 1d. Whenever a gas company go to Parliament, the local authority attack them, under the impression, I suppose, that anything they can get out of the pockets of gas companies comes out of the pockets of the shareholders. They are too short-sighted, I presume, to perceive that it comes out of the pockets of the consumers. In the past, they have always proposed an increase of illuminating power; and the illuminating power of the gas has been forced up beyond what can be obtained from the available supply of coal. In our case, it was forced up to 16 candles; and to make 16-candle gas, we had to resort to expensive and unnecessary processes of enrichment. We formerly used cannel; but cannel having become too scarce and dear for the purpose, we adopted the system of enriching by means of petroleum spirit. The money spent on this spirit was money wasted. It did no good to the consumer, and cost him a lot of money. So we took advantage of the recommendations of the Powers of Charge Committee to introduce an arrangement for reducing the illuminating power in our own case; and we succeeded. Fortunately, we had a strong Committee, a Committee of able men who were not bound by precedent, but were prepared, when they were convinced that a thing was good, to act on their convictions. They gave us our Bill; and provision is made in the Act (for it has now received the Royal Assent) for a gradual reduction of the illuminating power from 16 to 14 candles. In fact, it has had the effect of turning back the policy of Parliament. We speak of Parliament with the greatest respect; but Parliament, you know, is not always right. I will, however, say this for Parliament—that when it is shown, as it was shown to this Committee, that a certain course was a mistake, they reversed it; and I think in this action of ours we have rendered service to the gas industry generally. Of course, we were very much opposed by the County Council; and in paragraph 8 we have a word or two to say about that to-day. I do not want to use any hard words about them—that sadly mistaken body in many of their proceedings. The London County Council introduced a Bill to carry out one of the recommendations of the Powers of Charge Committee—the regulating of the supply of gas by means of slot meters. They had some most absurd proposals for standardizing fittings, and I do not know what, which practically were laughed out. It was shown that they were utterly impracticable and useless; and their Bill was cut down simply to provide that the Metropolitan Gas Companies should not charge more than 10d. extra on the price of gas for the use of the fittings. I think this was a mistake, because the effect of it will be to stereotype the 10d. as the proper price to charge to the slot-meter consumer for the use of fittings. We are all of us trying to reduce it. In our case, it was 9d.; and we were looking forward to coming down to 8d. But the effect of this will be that Parliament has said 10d. is the proper charge. I think a mistake has been made by the London County Council. But that is not the worst of it; that is a small matter. The main part of the Bill was that it introduced a different system of testing gas—that is to say, they were not satisfied with the present method. They wanted the gas tested in other ways. I need not go into a long explanation about it. I think I explained it at the last meeting. The effect would have been that we should have had to increase the illuminating power from 2 to 3 candles. That would have been an absolute necessity if the Bill had been passed; and for this, the consumers would have had to pay an extravagant price. It would have been of no value to them; and the worst of it was the consumers never asked for it. It is said in our report here that the London County Council, with no mandate from the consumers, introduced the Bill. Now, we thought we would put them to the test. When their Bill was in Committee, our Secretary wrote to the Clerk of the County Council, and asked him for information as to the complaints. Their witnesses said they had had numerous complaints from the consumers; and in consequence they had promoted their Bill. We asked him for a list of complaints—I will not speak of slot-meter consumers—that they had received during the last ten years. There were no complaints from the slot-meter consumers, as we only introduced the system four or five years ago; but there are 100,000 ordinary consumers, and how many complaints do you think they had received in the ten years? If they had received 1 per cent., it would not have been a large proportion; 1 per cent. would have been 1000. They actually received in ten years complaints from only one consumer—a thousandth part of 1 per cent. From that one consumer they had two letters. One of them is as follows:—

Sir,—I beg to ask your earnest attention to the very poor quality of our gas during the last few days. [This was November, 1894.] Its lighting power has been very poor. It makes my eyes ache to read by it.

Then the same man writes in November, 1897:—

Dear Sir,—I am sorry to complain, but our gas has been very poor lately. It was much better six weeks ago. I shall be obliged if you can bring pressure to bear on the South Metropolitan Gas Company to induce them to give us a better light.

If he had written to the Company, we should have sent and cleared his service. It is perfectly plain that that is what was the matter, because he says it was all right six weeks before, and we do not vary the quality of our gas like that. They had a complaint from one consumer; but they also had complaints from three Vestries—the Vestry of Rotherhithe, the Vestry of Battersea (there are Socialists on both of these Vestries), and the Vestry of Eltham, which comprises the Lee district. Eltham is at the very extremity of our district, where we had great difficulty in giving full pressure. We have remedied it; but if the people who could not get quite enough pressure had written to us instead of to the Vestry, we should have given them satisfaction. When we got the copies of these letters from the Vestries, we applied to the Vestries for particulars of these complaints, and not one of them could give us a single particular—not one. We repeated the request, and told them we would pay the expenses of a search; but not one of these Vestries could give any particulars whatever. Now, I will tell you what happened. One knows pretty well what John Smith says to his neighbour on the Vestry: "I say, Jones, my gas is very bad." "Oh!" says Jones, "so is mine. Let us move that the Vestry send a letter to the London County Council about it"—or something of that sort. At any rate, we gave them every opportunity, and not one single particular could we obtain. We threatened one of them with a Speaker's order if they would not give the information; but it was no good—we could not get it. Now, I say we are perfectly justified in saying that the London County Council, with no mandate from the consumers, introduced a Bill to alter the method of testing the gas of the Metropolitan Gas Companies, and then endeavoured to support their case with some very questionable evidence—evidence which the Committee did not accept. Their witnesses did not say it in so many words, but they deliberately implied fraud on the part of the Company. They as good as said—they did not say it, but they insinuated it, which is quite as bad—"It is true that the gas at the official testing-place is up to the mark; but that is not the gas you send out from the works. We believe"—they did not put it in those words—"we believe that you enrich it at the testing-places for the testing only." Well, it was too gross to be accepted; and those witnesses did themselves a great deal of harm in the eyes of the Committee. The Chairman of the Committee put it to more than one of them: "Then you impute deliberate fraud to the Company?" And the witness was obliged to say: "No; I do not attribute deliberate fraud." Then the Chairman said: "What does it mean?" and there was no answer. I will give you a specimen of the evidence of one of these witnesses. He is not one of the worst by any means. He has the reputation of being an honest man; and I believe him to be one. But he lacks one qualification, one striking characteristic, of the honest man—he does not believe in the honesty of other people; he does not believe in our honesty. This is the Chemist to the London County Council. I really believe him to be an honest man—I do not wish to say one word against him; but he insinuated this against our workpeople. Speaking of the inducement on the part of the Company to send out inferior gas: "With regard to the present Company"—that is ourselves—"I may say that there are some special inducements to the workmen to carry out their work in a manner unsatisfactory to the consumer. Assuming that all those who have the general control of the works have the most honourable intentions with regard to the consumer"—he assumes that, you see—"in the South Metropolitan Company the workmen are, I believe, largely, if not wholly, shareholders; and although that is a very satisfactory arrangement in other respects, it is, I should think, not a satisfactory arrangement for the consumer, because evidently a small workman, who has not so much conscience perhaps, would say: 'If I can get out gas of a somewhat inferior quality, it is very much to my advantage as a shareholder.' I think that that system should be remembered in the present case." Now, I can speak for the workmen. Such a thought has never entered the mind of any one of them. Has it? [addressing the two workmen Directors.] I ask you two gentlemen—Mr. Butcher and Mr. Austin. He says: "Assuming that those who have the general control of the works"—but he has put me rather in the same boat as the workmen as having very little conscience. In 1894, being so dissatisfied with the result of enrichment, it was at my suggestion that the proposal was made to the London County Council that we should try unenriched gas for a fortnight, and that the Council should make their tests in the ordinary way to try the effect of the absence of enrichment on the quality of the gas. They did make the tests, and they found that the quality of the gas was just as good without enrichment as with it. In the succeeding fortnight, we enriched as before with petroleum spirit; and they made their tests just as they did during the fortnight of the experiment. The results were these—that in out-of-the-way localities away from the testing-places they found gas of 14·85 candles when it was enriched, and 15 candles when it was not; so it was practically the same—15 candles in both cases. Then the Chemist to the Council was asked a question about that (I may say it was not under his supervision, but under that of his predecessor): "During those tests, you had substantially the same results." Witness asked: "With enrichment and without enrichment?" Counsel said "Yes;" and the answer was: "I think that was quite possible. We have had it from practical men that gas of 16-candle power can be obtained from coal direct—there is no doubt about that; so that, if the South Metropolitan Company wished, they could undoubtedly send out better gas." Then he was asked this question: "Your explanation is that the South Metropolitan Company during that fortnight were using coal that would give 16-candle power gas." That is the suggestion—that during the fortnight when we asked that the tests should be made we produced special gas for the purpose. His answer was: "I do not say they did; it is quite possible. (*Q.*) Is that the explanation you suggest? (*A.*) I think it is a possible explanation." Then a little farther on he states the average power of uncarburetted gas as 15 candles, and the average of the carburetted gas—that is the enriched gas—as 14·85 candles; and he is asked: "What explanation do you suggest as to these results? (*A.*) I say that they can be explained by a variation in the quality of the coal used. (*Q.*) Do you suggest as your explanation that the Company were using a coal that would give 16 candles? (*A.*) I do not say they did. There may be other explanations, but that is a possible explanation." I think that gentleman is an honest man; but he ought not to have made such an insinuation. We made a *bonâ fide* offer to the London County Council to make an experiment; and his suggestion is that we played tricks with the gas during that fortnight. Now, that is the sort of thing we have to meet. The Council give us trouble in every way. We have had to spend a great deal of money in opposing certain Bills of theirs. This session they were going for electric tramways which would seriously interfere with

our mains. In certain cases our mains would have to be removed; and they wanted to take power to remove them. We said: "We are perfectly willing to remove the mains; but we object to your doing it. We are responsible for the supply of gas; we are responsible for the mains; and we are responsible for the escapes that take place." "But," they said, "we shall employ you." "No," we replied, "we contend for the right to do our own work." Well, we had to fight that in both Houses, and at last we got it; and we were told afterwards that their own officials and their Counsel said that ours was a perfectly reasonable contention, but the Chairman of the Council Committee insisted on the Council doing all this. Well, now, the Chairman of the Committee, though no doubt a very honest man, is also, I should say, a very ignorant one to put us to all this trouble for nothing, and expense, too. If I might make a suggestion to that body, it would be this: That instead of treating us as thieves and vagabonds, they should treat us as a public body with duties to the public—a body who are quite willing to work loyally and cordially with them in the public interest. Now I come to the last paragraph, which relates to the dividend. Here I must say another word about the London County Council. We said in our circular to the shareholders: "The Directors take this opportunity of correcting the common mistake that gas shareholders receive large dividends. Since 1876, Parliament has enacted that all new capital shall be raised under the auction clauses—that is, it has been issued to the public (a large proportion being the Company's consumers) at the market price of the stock, which only yields 3¾ per cent. interest to the purchaser." The Comptroller of the London County Council, who I must say in all the evidence he has given on the gas question has been perfectly fair, falls foul of us on that circular, and says that it is misleading. In the circular, we say it is a mistake to suppose that gas shareholders receive large dividends. But this gentleman says that it is only on the auction capital that a small dividend is paid, and that on the original capital a very large dividend is paid. In our case, of the ordinary stock some 30 per cent. has been raised under the auction clauses, and on that he quite admits that the dividend is small; but he contends that on the rest it is large. Well, I maintain that the Company did not say here that the gas shares received a small dividend. We said the gas shareholders; and that applies not merely to those who have bought under the auction clauses, but to those who have bought or inherited gas stock of late. We took out the other day the number of shareholders that are now in existence who held stock in 1880. Out of 2000 shareholders in the three Companies that are now amalgamated that we had in 1880, only 500 of them now hold stock in the united Company. Our shareholders, who then numbered 2000, now number over 8000. A large proportion of these 8000 shareholders have bought stock of the Company under the auction clauses, and another large proportion have bought stock in the market; and I say that it is perfectly true that these shareholders who have bought stock in the market, or those who have inherited it if you like also, are only receiving a very small dividend at the rate of about 4 per cent.—that is, on the present market price. Now I will put it to you in another way. Take a property in the City. Supposing somebody here had purchased a piece of property on the other side of the street and had given £20,000 for it, and it is bringing him in £1000 a year—that is, just 5 per cent. Forty years ago, probably that property was only worth £4000; and as £1000 a year is 25 per cent. on the £4000 that the property was worth forty years ago, is it fair to say that the purchaser is getting 25 per cent. on it? Is it not fair to say that the rate of interest he is getting is 5 per cent.? Some of the shareholders have inherited the stock; but the Government have not been content with the probate duty on the original payment. They have insisted on duty on the full value; and, therefore, I contend that the Comptroller here is wrong in saying that the Company are paying large dividends. In the report he made to the London County Council, he says: "The following are the dividends to which they are now entitled, even with gas at the present advanced prices: Gaslight and Coke, 11 per cent.; South Metropolitan, 12½ per cent.; and Commercial, 11½ per cent." We had one letter from a consumer saying it is a most unfair thing, a most unreasonable thing, for you to raise the price of gas when you are paying 12½ per cent. Mr. Bush was able to write a letter to the gentleman and explain to him that he had been misled by the statements of the London County Council, and that settled the matter satisfactorily; and I do say again that the dividends that the shareholders are getting are at a very low rate indeed—about 4 per cent. I think it is too low. I think gas property ought to yield more; and perhaps one result of the present advance in coal will be to put down the excessive price of gas stock, so that investors in future will be able to purchase at something like reasonable rates, that will pay perhaps 4½ per cent. Now, I thank you for the great patience with which you have listened to me, and I conclude by proposing the motion for the adoption of the report.

Mr. Simpson Rostron seconded the motion.

A Shareholder asked the Chairman if he could give the meeting any information as to what had been done in regard to the negotiations with the Gaslight and Coke Company.

The Chairman said this formed one of the recommendations of the Powers of Charge Committee. It passed the House of Commons Committee; but when it got to the House of Lords, it was rejected—he believed on the ground that they thought it would give capital to the Gaslight and Coke Company, to enable them to go on for a few years. The House of Lords in effect said: "We are not going to let you have this. You must come direct to Parliament for it."

The resolution was carried unanimously.

The Deputy-Chairman (Mr. Ewart) moved—"That a dividend at the rate of 5⅛ per cent. per annum be now declared, and that the warrants be transmitted to the registered addresses of the proprietors by post." He observed that they would all appreciate this resolution, more especially as it was the last occasion, for some while at all events—but he hoped only for a short time—that they would enjoy the same dividend. They must bear in mind that the great railway companies, who, like themselves, were very large consumers of coal, had nearly all reduced their dividends for the past year; and he thought they might fairly congratulate themselves that they had been able to maintain theirs. But, as business men, they knew that when the price of an article was abnormally increased production also invariably increased, with the result that prices were brought down to a lower level than before; and he thought they might anticipate this result with regard to coal.

Mr. Butcher (a workman Director), in seconding the motion, assured the meeting, on behalf of the employees, that they were working heartily and cheerfully under the altered circumstances; and they certainly would not do such a mean thing as was imputed by the County Council in the evidence that had just been read. Such a thing also was impossible, as any sensible person ought to know. The workmen were under the management of capable engineers and foremen; and it would be impossible to depart from the usual line of work laid down by these gentlemen. With regard to profit-sharing, he had been benefited financially by the system for the last ten years; and for this benefit he had first of all to thank their worthy Chairman, and secondly the shareholders for their acquiescence in, and adoption of, the principle. He could assure them that the workpeople were sensible of the advantage of profit-sharing, by which they had become holders in the Company to the tune of something like £100,000. This was a golden lever which influenced all their work, and induced them to show a proper spirit when bad times came. They also stood to lose in this matter; and the sooner they got back to profit-sharing prices, the better they would like it.

The resolution was passed unanimously.

The Chairman said there was one other formal resolution which he would move. It was—"That the Directors be, and are hereby, authorized to raise the sum of £250,000 further capital by the issue of ordinary stock and debenture stock, in such amounts, at such times, and in such manner, as they may deem desirable, pursuant to the powers contained in the Company's Acts of 1882 and 1896." The further capital would not, of course, be issued all at once; but as the increase in consumption amounted to 590 million cubic feet in the half year, they must spend money in order to provide plant to meet the increased demand.

Mr. Edward Cardwell seconded the resolution, which was unanimously adopted.

Mr. Jones proposed a vote of thanks to the Chairman and Board for their services during the half year.

Mr. Franklin seconded the resolution, which was cordially agreed to.

The Chairman, in making acknowledgment, said the approval of such a meeting as this was compensation for the trouble and anxiety they had experienced. His colleagues and himself stood before them a thoroughly united Board—workmen Directors and all; there had never been a shadow of division. They had all worked for the general welfare of the Company, and therefore appreciated very much indeed this expression of the shareholders' feelings. Before the meeting broke up, he would ask them to also pass a very hearty vote of thanks to the employees, with whom he associated the names of Mr. Carpenter, the Chief Engineer, and Mr. Bush, the Secretary.

Mr. Ewart seconded the motion, which was carried unanimously.

Mr. C. C. Carpenter acknowledged the compliment on behalf of the engineering staff, and said he had never known a staff who worked together in such a cordial spirit.

Mr. Bush also thanked the meeting for the vote; and, with regard to the apparently frequent quotation of the Company's shares, which might give the impression that very large transactions took place in them, he observed that the shareholders would perhaps be surprised to hear that during the last six months on an average only twelve transfers a week had come through from brokers. This showed, he thought, that shareholders who had invested money in the Company meant to stick to their stock, and were not what might be called "Saturday to Monday" shareholders.

CROYDON COMMERCIAL GAS COMPANY.

The Half-Yearly Report and Accounts.

The report which the Directors of the above-named Company will present at the half-yearly meeting of shareholders next Friday opens with the satisfactory statement that the quantity of gas sold in the six months ending the 30th of June was 16·98 per cent. more than in the corresponding period of last year. They then go on to say that the increase in the cost of coal and oil during the ensuing year will amount to a sum equal to nearly 9d. per 1000 cubic feet of gas sold, and, in addition, considerable advances have been made in the prices of nearly all other materials used by the Company. The receipts from coke having already benefited by a steadily rising market, the Company cannot expect a proportional increase from this source. The Directors are pleased to be able to state that, so far, it had not been necessary to advance the charge for gas. In view, however, of the large prospective increase in expenditure explained above, they are compelled to do so now, and propose from Michaelmas next to raise the price 2d. per 1000 cubic feet. They hope this increase will be but temporary.

The accounts accompanying the report show that the revenue from the sale of gas was £53,472; the rental of meters, stoves, and fittings £3573; residuals produced £18,556; and the total receipts were £75,681. The expenditure on the manufacture of gas was £39,250 (coal and oil costing £27,022, as compared with £19,832 in the first half of last year); on distribution, £6314; and on management, £2344—the total expenditure being £53,360. The balance carried to the net revenue account is £22,321, against £16,813; and the amount available for distribution is £25,300 as compared with £17,021. The Directors recommend dividends at the rates of 14, 11, and 9 per cent. per annum, free of income-tax. These will absorb £15,834, and leave £9466 to be carried forward. Under the supervision of Mr. J. W. Helps, M.Inst C.E., the Company's Engineer and Manager, 26,972 tons of coal and 333,889 gallons of oil were used in the production of 402,295,000 cubic feet of gas, of which 385,487,600 cubic feet were sold and 390,211,500 cubic feet accounted for. The estimated quantities of residuals produced were: Coke, 16,183 tons; breeze, 3391 tons; tar, 340,066 gallons; and ammoniacal liquor, 663,008 gallons—the make of sulphate being 218 tons, the whole of which, with all that was in store, was sold.

New Gas Borrowing Powers for Burton-on-Trent.—The Burton-on-Trent Town Council are applying to the Local Government Board for sanction to the borrowing of £17,480 for gas-works purposes. A large proportion of this is to be spent in gas cooking-stoves and prepayment meters and fittings.

PREPAYMENT METERS.

CHANGING PRICE.
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THIS METER CAN BE ALTERED *in situ.*

INSTRUCTIONS.

The Brass Plate has holes around its edge, numbered; these indicate the feet delivered for the Coin used.
To set the Meter, note Figs. I., II., III., IV.

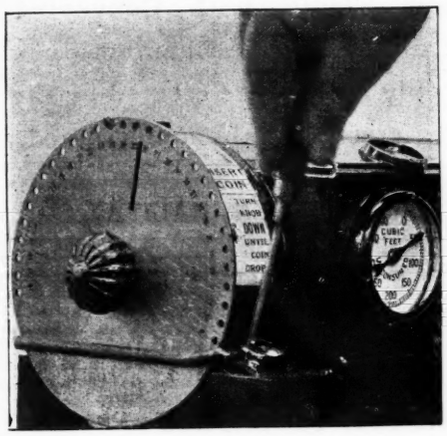

Fig. I.
Break Company's Seal and Remove Screw—THUS.

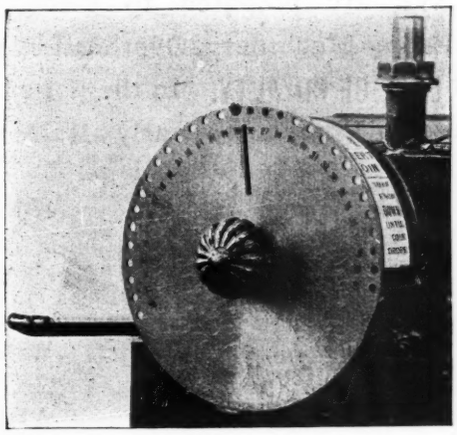

Fig. II.
Swing Band Back—THUS.

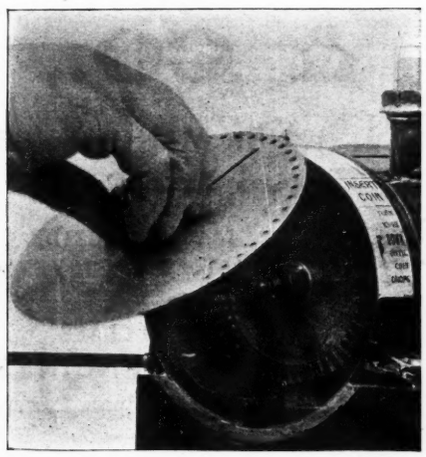

Fig. III.
Lift Plate Off—THUS.

Fig. IV.
Replace Plate—THUS.

Swing Band Forward—Replace Screw—and Re-seal.

NOTHING SO EASY. NOTHING SO ACCURATE.

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A "NEEDFUL" EXPLANATION.

We note an Advertisement in the "JOURNAL," under the name of the NEW CONVEYOR COMPANY, stating that they had taken over the business of the AUTOMATIC COAL-GAS RETORT COMPANY, LIMITED; and, as it may create a false impression, we beg to say there are **NO VALID PATENTS** existing in connection with Inclined Retorts (beyond a few small and subsidiary ones, dealing with details).

We are prepared to erect Inclined Retort Plants, with Conveying and Elevating Machinery, Overhead Tanks, Hoppers, and Measuring Chambers, complete and **FREE OF ROYALTY.** In the list of places given, only a few were erected by the New Conveyor Company—nearly all the remainder being erected by the undersigned.

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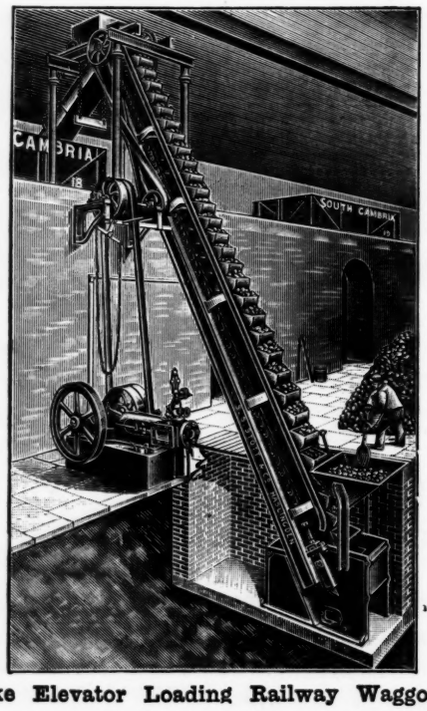

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BRENTFORD GAS COMPANY.

The Half-Yearly Meeting of this Company was held on Friday, at the Charing Cross Hotel, W.C.—Mr. HOWARD C. WARD in the chair.

The SECRETARY (Mr. W. Mann) read the notice convening the meeting; and the report and accounts, which were summarized in the "JOURNAL" for July 31, were taken as read.

The CHAIRMAN, in moving their adoption, said he thought the Directors had very great reason to be more than usually satisfied in meeting the proprietors, as they had what he ventured to think was a most gratifying account to present to them. In spite of the high price of coal that had ruled, and punished as several gas companies had undoubtedly been by it, their Company had had, he might say, the privilege of having a contract at about 13s. 10d. per ton for a considerable amount of coal. While they knew what had been paid for coal during the past half year by many people, and what they had got to pay in the future, the Directors cancelled the contract, and entered into another for a considerable extra quantity of coal, which would last up to this time next year, at an advance of about 3s. 7d. a ton. Some of the gas companies with whom gentlemen present were connected had had to enter into contracts at an advance of no less than 6s. and 7s. per ton. This was unavoidable on the part of the companies; but, as a consequence, in the case of almost every Metropolitan Gas Company a substantial rise in the price of gas had been necessitated. He believed even that very successful Company the Commercial had to increase their price. The Directors of the Brentford Company, however, were able to come before the proprietors on this occasion without having the slightest intention of raising the price in their district—at any rate at present. And from what they could see with the contract for coal they had, and the prospects of residual products, they thought very probably they would not have to raise the price—certainly not before next Christmas, and they hoped not even after that. He believed he might say they were the only Metropolitan Gas Company who had gone through this—well he was going to say "crisis," but he would call it the tyranny of the coal owners in putting up the cost of coal as they had done—without having to raise the price of gas to the consumers. On the half-year's working, they would have a surplus of about £6000 after paying their dividend of 12 per cent. The Board expected they would have very little, if any, deficit at Christmas; certainly they would be enabled to pay the dividend for the twelvemonth. With such a prospect before them, they considered it would be unjust to the consumers if they were to raise the price of gas. Gratitude to gas companies was not a common thing; and therefore it was a pleasure to him to find complimentary remarks about them in the Press. The "Investors' Review" said: "We are glad to find the Board of a gas company that is not panic-stricken at the advance in the price of coal. In a refreshingly cool manner, the Directors of this concern [the Brentford] state that, in view of the increased value of products generally, and a favourable contract for coal, they have decided not to give notice of any increase in the price of gas, which will therefore remain at 2s. 11d. per 1000 cubic feet." Then another paper said: "At this juncture, it is rather refreshing to take up the report of a gas company which has not to announce an increase in its price. The Brentford Gas Company is in this happy position."

Mr. J. W. FIELD: What paper is that, sir?

The CHAIRMAN: The "Capitalist."

Mr. FIELD: Then it is all rot.

The CHAIRMAN: That is not rot.

Mr. FIELD: Everything you find in the "Capitalist" is utter rot, sir.

The CHAIRMAN: I beg to tell you that that is a very absurd remark to make. I cannot understand why you should describe it as "utter rot" when they say "it is refreshing to take up the report of a gas company which has not to announce an increase in its price." There is no justification for saying it is utter rot; it is absolutely true. I cannot understand that sort of thing when we are in a position to do it. Proceeding with his address, the Chairman said he did not think they could, in the interests of justice, increase the price of gas. If there had been any necessity for it, he should have been the first to have done it. That necessity had not arisen; and, with their good friend (Mr. Livesey), they hoped the price of coal would soon go down. Mr. Livesey had said the price of coal would drop; and he had, by some of his recent utterances, provoked the wrath of the coalowners. He (the Chairman) hoped that Mr. Livesey's predictions would prove true. They all knew that the price of oil had come down. As to the results of the half-year's working, they had made a profit of £42,743, as against £37,437 in the June half of last year. They were enabled out of this to pay the dividend of 12 per cent., and have a surplus of £6543. Adding the surplus to the balance of undivided profit, they would carry over £42,502.

Mr. ULICK J. BURKE seconded the motion.

Mr. H. D. ELLIS said he understood the Chairman to say that their former price for coal was 13s. 10d; and the current contract showed an increase of 3s 7d. This made 17s. 5d. per ton; and he should like to know whether this was f.o.b.

The CHAIRMAN: That is into barge.

Mr. FIELD: 17s. 6d. delivered into the Thames.

The ENGINEER (Mr. J. Husband): And 15s. into barge.

Mr. ELLIS (continuing) said he heartily congratulated the Directors on the statement of accounts they had laid before the proprietors. He only wished the Commercial Company could show anything like them; but he was afraid they would not. Here the Directors were able to pay the dividend, and carry forward a substantial sum, without having raised the price of gas; and, moreover, they did not contemplate an increase for some time. This was the point on which he wished to make a remark or two. He really doubted whether, when everybody else was raising the price of gas, as the Brentford Company must inevitably do at some time (he did not suppose they would be able to go through next year without increasing it), it was not advisable to do so at once rather than defer it until they stood by themselves—an object of public odium, without any co-partners in their "crime" to help them out. The Commercial Company did that at one time; and they got a great deal of *kudos* for it. But the inevitable time came when they had to raise the price; and the storm it brought about their ears, he should never forget. There were other companies who had been equally prosperous half year after half year; but they had given notice of increases in price. He could mention the Wandsworth and Putney Company, and the Croydon Company, who had an increase of no less than 17 per cent., and yet they were going to give notice of a rise from Michaelmas. He said this with all respect; and, with the greatest submission, he would suggest whether it was not unadvisable to defer the inevitable—whether it would not be better for them to raise the price of gas when everybody else was doing so than delay it and attract greater attention to themselves. He believed they were selling gas at 2s. 11d. per 1000 cubic feet; and this would entitle them to increase the price 2d. without reducing the present dividend.

Mr. W. HUGHES could hardly see the force of Mr. Ellis's argument. Why one company should follow the suit of others when there was no necessity, he could not see. In his opinion, the Directors were pursuing a right course in supplying the consumers cheaply while they could afford to do so, to keep them in hand, and not drive them to the electric light.

The CHAIRMAN, in reply, said they regarded this as a matter of justice. It was all very nice to raise the price of gas 2d., and have a large surplus; but he thought it was only what was due to the consumers if the Company could, upon a fair estimate of a year's working, keep the price of gas at its existing rate. Then, if the necessity arose for increasing the price, he believed the consumers would very readily fall in with it. The Company had a great many competitors; and they had competition with the electric light in the worst form, because it was supplied by Vestries who used public money for the purpose. The Board therefore thought it was necessary, both in the interests of the consumers and the proprietors, to keep the price of gas as low as possible.

The motion was unanimously carried.

A dividend at the rate of 5 per cent. per annum on the 5 per cent. preference stock, of 12 per cent. on the consolidated stock, and of 9 per cent. on the new stock having been declared,

An Extraordinary General Meeting was held, to authorize the Directors to raise any sum not exceeding in the whole £46,875 by the issue of 4 per cent. perpetual debenture stock.

The CHAIRMAN, in moving the necessary resolution, explained that a resolution to this effect was passed on a previous occasion; but they afterwards found that the notice of the resolution did not extend to debenture stock. Therefore, although they had settled everything, and people had tendered for the stock, the Directors thought it better to withdraw it, in order to be perfectly safe. They had now given a proper notice, and again submitted the resolution. He added that the proprietors would notice that the Directors had not spent much capital during the past half year. The greatest sum had been expended on additional meters and stoves—£6972; but the proprietors would be glad to know that, by the system the Directors had adopted, the depreciation on stoves and prepayment fittings and meters amounted to no less than £8000. Under this system the expenditure on stoves, fittings, and meters would be gradually wiped out; and they would become the property of the Company without any charge on capital.

Mr. BURKE seconded the proposition.

Mr. ELLIS asked whether the Directors were thinking of issuing any of this stock now. It was not a very good time to do so.

The CHAIRMAN replied that they would be issuing some of it during this half year. He did not know how the Commercial Company stood, but in their own case they only had a balance of £320 on capital account.

Mr. ELLIS said the Commercial Company always overdrew their capital account; and they worked with a large balance borrowed from their bankers. When the market was flat, they never put stock out, but borrowed from their bankers.

Mr. FIELD: And pay a high rate of interest.

Mr. ELLIS: Less than we can get it at in any other way.

The motion was unanimously agreed to.

The usual complimentary votes terminated the proceedings.

NEW SUNLIGHT INCANDESCENT COMPANY, LIMITED.

An Extraordinary General Meeting of this Company was held at Winchester House, Old Broad Street, E.C, on Friday last, to consider the questions of the proposed compensation of the Directors and the advisability of winding the Company up voluntarily. Mr. J. H. DUNCAN, the Chairman of the Company, presided.

The SECRETARY (Mr. Lawrence Fletcher) having read the notice convening the meeting,

The CHAIRMAN said the shareholders had already accepted the contract made with the Welsbach Company, and given the Board general directions as to how to give effect to it. They had met to-day to take the first step in the matter—namely, putting the Company into liquidation. Another question they had to consider was the proposal to pay £5000 to the Directors, in consideration of their extra services. This matter had already been referred to in a circular issued to the shareholders. In this circular fuller explanations were promised at the meeting; and he (the Chairman) thought these explanations were necessary in order to make the matter quite clear. The shareholders did not seem to understand at all the burden that had been thrown upon the Directors of the Company. At the time of the reconstruction, the litigation with the Welsbach Company did not promise to be of a very serious character; and on several occasions he had pointed out to the shareholders that it looked like nothing but "bounce." No sooner, however, had the new Company got fairly in the saddle, than the opposite side showed their intentions clearly; and the Sunlight Company had to make preparations to meet them. This led the Directors into a state of things which he could easily understand the shareholders did not quite appreciate, but which became a necessary part of the whole proceedings. The Welsbach Company brought their actions, not only against the Sunlight Company, but also against the Directors. No doubt this was a very sensible course for the Welsbach Company to take; but it placed the Directors in a very awkward position. Then, again, customers had to be secured; and this was not accomplished simply by advertising for them. The Directors had to coax them, and to give them their personal guarantee that they should run no risk whatever in dealing with the Company. In addition to this, at the time when heavy legal costs were being incurred, the Directors had again to step into the breach, and give their personal

guarantee for the money required. They were also now asked to sign very serious obligations for the future. All the knowledge gained by them through their connection with the Sunlight Company was to be at the service of the Welsbach Company; and they were to be bound absolutely for three years not to have anything to do, either directly or indirectly, with incandescent gas lighting. All this was of the essence of the contract with the Welsbach Company. Many Directors, in circumstances like these, would have taken care of themselves, by making their compensation part of the agreement; but instead of taking that course, the Board left themselves entirely in the hands of the shareholders.

Mr. JAY said he thought that a body of men who studied the interests of their shareholders as the Directors of the Sunlight Company had done, were certainly entitled to the comparatively small remuneration suggested. He had therefore much pleasure in moving—"That a sum of £5000 be paid to the Directors out of the assets of the Company for their extra services, and as compensation for their proposed loss of office or the reduction of their numbers and remuneration (as the case may be), such sum to be divided amongst them in proportions similar to the division of their present remuneration, or in such proportions and manner as the Directors may determine amongst themselves, provided that if the distribution in the liquidation does not amount to 11s. per share, the said sum of £5000 shall be reduced in proportion to the amount actually distributed."

Mr. PARKER seconded the resolution.

Mr. HOLMES moved, as an amendment, that the question of additional remuneration to the Directors be postponed till after the accounts had been placed before the shareholders.

Mr. KLENCK, in seconding the amendment, said that before they voted this £5000 to the Directors, they ought to be informed how the Company stood, and as to the amount of money available for distribution among the shareholders.

The CHAIRMAN explained that the Directors had made every effort to get the accounts out in time for the meeting; but as they had, for the purposes of the amalgamation, to make them up to July 31, this was not possible. The accounts would, however, be completed in time to be submitted to the confirmatory meeting which it would be necessary for the Company to hold.

After a long and somewhat animated discussion, the amendment was lost, and the original motion declared carried by a large majority.

Mr. KLENCK thereupon presented a formal demand for a poll of the shareholders on the question, which he, however, subsequently withdrew, on it being intimated that the Directors held proxies in their favour representing nearly 90,000 shares.

On the motion of the CHAIRMAN, it was next decided—"That the Company be wound up voluntarily, under the Companies Acts of 1862 and 1867."

The CHAIRMAN said that, with regard to the stock they were to receive from the Welsbach Company, he had been advised that the best thing to do would be to advertise it for public subscription, and so get it properly introduced on the Stock Exchange. While the cost of doing this would be from £1000 to £1500, it would certainly add ten points to the value of the stock, and would greatly facilitate dealings in it. His recommendation was, therefore, that the expense be incurred.

Some conversation on the subject having taken place, it was decided that the matter should be left over till the next meeting.

The proceedings concluded with a vote of thanks to the Chairman.

GLASGOW CORPORATION GAS SUPPLY.

The Committee's Report—The Accounts for the Past Year.

The report of the Committee on Gas Supply to the Corporation of Glasgow, with the Corporation gas account for the year ending the 31st of May last, has been issued. The report states that the gross revenue amounted to £770,002, and the gross expenditure to £646,281; to which is added depreciation written off capital, £37,979, and a further depreciation written off the Dalmarnock station and works of £7700—making the total expenditure £691,960, and leaving a balance of £78,042 to be carried to the profit and loss account. Out of this the Committee had to meet the following requirements during the year: Annuities on stock, £34,763; interest on borrowed money and redeemed loans, £35,581; and sinking fund, £7665—together, £78,009; leaving a surplus of £33 on the year's operations. To this sum there falls to be added the balance of £551 brought from last year; making a sum to be carried forward to the credit of the current year's account of £584. The report proceeds:—

Your Committee have pleasure in stating that the market for residuals has been very favourable to the Corporation, with consequent increase of income from this source and from the greater quantity of coal carbonized. The average price received per ton of coal carbonized for the past year has been 3s. 5·62d, as compared with 2s. 6·9d. for the previous year. The quantity of coke sold during last year was 259,679 tons, as compared with 240,832 tons for the previous year; the average price received being 6s. 0·93d. per ton, as compared with 5s. 0·63d. for the previous year.

Your Committee as usual advertised for tenders for coal to be supplied during the coming year, and have concluded contracts for almost the whole quantity required, at a considerable increase per ton over last year's prices. Having regard to this fact, and to the erection of new works at Provan, which will necessitate a much larger charge for interest on capital to be expended, a larger contribution to sinking fund, that this expenditure will be non-productive for a considerable time, and also keeping in view that the market for residuals may not continue throughout the year at its present high rate, your Committee regret that they have no alternative but to recommend to the Corporation that the price of gas be increased from 2s. 2d. to 2s. 6d. per 1000 cubic feet; this increase to take effect as from the date of the last survey.

The quantity of gas made during the past year was 5,969,110,800 cubic feet, and the quantity sold or accounted for 5,399,535,930 cubic feet; the quantity unaccounted for being 569,574,870 cubic feet, or 9·5 per cent. The sinking fund, with its accumulations, now stands at £388,665.

As will be seen from the statement of loan capital, the unexhausted borrowing powers of the Corporation, under the Gas Acts, both for gas and electricity purposes, as at 31st of May last, stood at £306,565. A much larger amount than this will be required within the next year or two to meet the capital expenditure which will be involved in the erection and equipment of the new Provan Gas-Works, and for additions to the chemical works at Dawsholm; and further capital moneys will also have to be expended on account of new works and plant, in connection with the Electricity Department, within the same period. Your Committee have, therefore, to recommend that an application be made in Parliament next session for authority to increase the borrowing powers under the Gas Acts from £2,000,000 to £3,000,000 sterling.

The works and mains have been maintained in an efficient condition during the past year.

The new gasholder at Dawsholm is now completed, and will be at work during the coming winter.

As mentioned in last year's report, ground has been acquired adjoining the Dawsholm works for the erection of new tar-distilling works. Plans are being prepared for these works, and their construction will be commenced as soon as possible.

Additional scrubbing apparatus and an additional station-meter are being erected at the Tradeston works.

Parliamentary authority for the purchase of the land required for the new works at Provan, referred to in last year's report, was obtained in August last. Plans have been prepared; and the contract for the excavation and brickwork of the first section of the works has been entered into. The erection of the works will be pushed on as rapidly as possible.

About 18 miles of new mains have been laid during the past year.

The number of meters in use on the 31st of May, 1900, was 201,978; being an increase of 7674 over the number in use at the same date last year. During the year, 17,487 meters were repaired; and 24,206 were examined while in use, of which 21,369 were found in a satisfactory condition, and 2837 were found defective and removed.

The number of gas-stoves lent on hire as at the 31st of May, 1900, was 17,722. The number of gas heating and cooking appliances sold during the year was 1490.

The site of the old gas-works in Pollokshaws was sold by the Corporation to the Commissioners of that burgh at the price of £1251, with entry at Whitsunday last. The Corporation, however, have purchased from Mr. John Campbell, with entry at the same term, a portion of ground situated a short distance to the south of the burgh of Pollokshaws, and extending to 10,843 square yards; and this ground will be available for the erection thereon of gasholders.

The statement of accounts shows the stock capital to remain the same as last year—viz., £300,000 of shares in the Gas Companies, bearing perpetual annuities at the rate of 9 per cent., and £115,000 of shares bearing perpetual annuities at the rate of 6¾ per cent. The total annuities payable are £34,762 10s. Of loan capital, the amount authorized is £2,000,000. The sum borrowed for the Gas Department has been £766,500 at the rate of £3 5s. per cent., as compared with £661,500 at the rate of £3 1s. 6d. a year ago; and for the Electricity Department, £628,500, the rates of interest being the same. There have been redeemed, of gas loans, £286,935, the same sum as last year; and of electricity loans, £11,500, as compared with £8000 a year ago. A new capital account is stated with great elaboration, so as to show the outlays in the period between 1869-1900. The amounts expended, less depreciations and sums realized for properties sold, are stated at £1,400,921, as compared with £1,315,609 a year ago. Capital liabilities, including £286,935 of redeemed debt, are stated at £1,468,435; leaving a balance in the books of liabilities over assets of £67,513, as compared with a similar balance a year ago of £47,825. The capital account for the past year shows that there was spent, in additions to the Dawsholm works, £3475, and that £9041 was expended in acquiring land at that station; that £1385 was spent upon additions to the Tradeston works; that £13,810 was spent upon additions at the Temple works; that £274 was spent upon additions to the chemical works at Dawsholm, and £400 upon additions to the chemical works at Tradeston; that £11,586 was expended upon extensions to mains, and £13,231 upon new gas-meters; and that the expenditure upon the new works at Provan amounted to £71,526, of which £58,873 was the cost of acquiring the site, £1094 was paid as compensation for disturbance of position, and the sum of £11,553 has been expended upon work.

The revenue account shows that of the total sum of £770,002 received, £577,933 was for gas, as compared with £557,788; £68,707 was for coke, as compared with £49,932; £121,347 was for ammoniacal liquor and tar, as compared with £89,000; £480 was for waste lime, as compared with £732; and £1526 was rents of house properties and chemical works, as compared with £2638. On the expenditure side the manufacture of gas cost £556,329, as compared with £489,379. The quantity of coal used was 666,769 tons, as compared with 644,925 tons; and the price was £382,398, as compared with £324,810. Purifying materials, and oil, water, &c., at works, cost £30,460, as compared with £27,910; salaries of Engineers, superintendents, and officers at works cost £4406, as compared with £4834; wages amounted to £83,567, as compared with £76,896; and repairs and maintenance cost £49,327, as compared with £49,680. Distribution of gas cost £56,141, as compared with £55,019. Rents, rates, and taxes cost £21,629, as compared with £18,881. Management cost £10,086, as compared with £10,515. Law charges amounted to £33, as compared with £95; and parliamentary charges to £1803, as compared with £756. Retiring allowances to old servants of the Companies amounted to £258, as compared with £320. Depreciation is stated at £45,679, made up of £27,281 on works and pipes, at 2½ per cent., £10,698 on meters, at 6 per cent., and the £7700 extra depreciation on the Dalmarnock works. The general balance-sheet shows deposits in security of gas-rents to the amount of £29,464; a fire insurance fund of £539; and a contingent fund of £16,008. The department own a stud of seventy horses. The receipts from stoves and fittings sold amount to £834, as compared with £813; and the rents of stoves hired amounted to £5072, as compared with £4440. The quantity of gas sold was 185,621,430 cubic feet more than in the preceding year. The increase reported a year ago was 413,557,550 cubic feet; and in the year preceding that, 174,376,000 cubic feet.

The London correspondent of the "Yorkshire Post" says that since the subject of water gas was recently mentioned in the House of Commons, there has been a good deal of discussion about it among people connected with science and the manufacturing industries; and there seems to be a general desire that some parliamentary restriction should be placed on its use. This is especially the view of one or two of the Medical Officers of Health, who hold that it is essential in the interests of the public. He thinks that another session is almost certain to see legislation on the matter.

THE PRICE OF GAS AT BOLTON.

The proposal on the part of the Gas Committee of the Bolton Corporation to raise the price of gas 3d. per 1000 cubic feet as from the 1st of October next, is being strongly opposed by the tradesmen of the town. There was a short discussion on the question at a recent meeting of the Town Council, and Alderman Miles, as Chairman of the Gas Committee, accepted a friendly amendment referring the matter back, so that the tradesmen might have an opportunity of laying their views before that body. Since then the several Tradesmen's Associations have met, and it was arranged that a joint deputation should wait upon the Committee. The tradesmen argue that the Gas Department should not be looked upon to produce large sums out of profits in aid of the rates, because this mode of taxation is not equal in its treatment. For example, non users of gas—and a good many firms now exclusively employ electricity—will participate in the profits without paying a single halfpenny towards the increased revenue. The Co-operative Society, with a membership of some 25,000, generate their own electricity; and so do a number of manufacturing and machine-making firms. Another point is that the cottager would pay the advance, while the landlord, through the compounding of rates, would reap all the advantage in the rating. On behalf of the Gas Committee, it is pointed out that the increased price of coal means this year an extra £25,000; and if they are expected to provide a large sum in aid of rates, they can only do it by advancing the charge for gas to the consumer. Last April, the Gas Department handed over £20,000; and in the year 1898-9 the sum was £25,000. The price of gas now is 2s. 3d. net.

At a meeting of the Gas Committee last Friday, a deputation of tradesmen attended to protest against the proposed increase in the price of gas. Their argument was that to get large profits out of the Gas Department in relief of the rates brought about an uneven form of rating. It was pointed out in support of this that certain firms in the town who did not use gas, but generated electricity on their own premises, obtained the benefit of reduced rating while contributing nothing to the gas revenue. It was further argued that tradesmen in the centre of the town, being large consumers of gas, and using this illuminant long after private and public offices were closed, would feel the pinch by having to pay the proposed increase in price. Another point was that the majority of the consumers in the borough paid their rates in their rent, and therefore, if called upon to pay the enhanced price for gas, they would not benefit by the amount handed over from the Gas Department in aid of the rates. The deputation handed in a memorial signed by a large number of tradesmen protesting against the proposed advance. On behalf of the Gas Committee, it was shown that coal was costing the department £25,000 more this year than it did last, and that the Finance Committee had for the current year estimated upon a profit of £20,000 from the gas-works. After the deputation had retired, the Committee considered the points raised, and eventually passed the following resolution: "That the Committee, having authorized the Borough Treasurer to estimate that the sum of £20,000 would be available out of the profits of the Gas Department for the next year, are unable to free themselves from that obligation. But, in view of the increased price now being obtained from the sale of residual products, they find that the sum mentioned can be provided by an increase of 2d. per 1000 cubic feet in the price of gas, instead of 3d. as previously proposed; and they therefore recommend that the price of gas be increased on and after Oct. 1 next 2d. per 1000 feet."

PROVINCIAL GAS AND WATER COMPANIES.

We commence to-day our usual notes on the progress made by Gas and Water Companies in various parts of the kingdom whose reports and accounts come to hand about this time.

Gas Companies.

The accounts presented at the half-yearly meeting of the Aldershot Gas and Water Company on the 10th inst. showed that the revenue from the sale of gas in the six months ending the 30th of June amounted to £10,000, from the supply of water to £3331, and from residual products to £4327; the total receipts being £18,302, as compared with £14,871 in the first half of last year. As the expenditure amounted to £13,238, there was a balance of £5064 to go to the profit and loss account, against £4199 before. The amount available for distribution was £9144; and after providing dividends on the preference shares and interest, the Directors recommended the payment of a dividend at the rate of £11 8s. 6d. per cent. per annum on the "A" shares, of £8 8s. 6d. per cent. per annum on the "B" shares (these rates being in accordance with the sliding-scale), and of £7 per cent. per annum on the ordinary "E" shares—all less income-tax. They reported that the business of the Company generally showed satisfactory progress. As the price of the coal contracted to be delivered during the twelve months dating from the 1st of July last shows an increase of more than 50 per cent. above the previous contracts, the Directors have found it necessary to raise the price of gas to ordinary consumers in Aldershot and Farnborough by 3d. per 1000 cubic feet from that date.

At the half-yearly meeting of the Bristol Gas Company on Thursday, the Directors will report an increase of 10 per cent. in the sale of gas in the six months ending the 30th of June, as compared with the corresponding period of 1899; while the revenue account shows a substantial profit. The receipts amounted to £158,553, against £142,613; and the expenditure to £119,546, against £108,434—the balance carried to the profit and loss account being £39,007, as compared with £34,179. The amount available for distribution is £60,689; and the Directors recommend a dividend at the rate of 5 per cent. per annum. This will amount to £24,987 10s., and leave a balance of £35,701 10s. to be carried forward. The Company spent in the past six months £27,111 on capital account, which has overdrawn it to the extent of some £5000; and, in view of the small balance (£13,000) of unissued capital authorized by the Act of 1891, and the increasing demand for gas, the Directors propose to ask for power to issue the ordinary and debenture stock sanctioned by the Act of 1899.

The half-yearly meeting of the Cambridge Gas Company was held on the 1st inst.—Mr. E. H. Parker in the chair. The Directors reported that the trading for the six months ending June 30 had been satisfactory; and they recommended the declaration of the maximum dividends. Referring to the advance in the price of coal, and the necessity for raising the charge for gas, they expressed the opinion that the burden caused by the extraordinary (and it was hoped temporary) rise in coals should not fall exclusively upon the consumers; and they suggested that during the period of abnormal prices a reduction should be made from the maximum dividends. In moving the adoption of the report, the Chairman said there had been an increase in revenue of £3079; and the amount carried to the profit and loss account was £7652. The output of gas had increased; and the production had been fair. From each ton of coal carbonized they had made 10,146 cubic feet of gas, of which they had sold only 9605 cubic feet—a difference of about 500 cubic feet. This represented a loss of £1080 in gas unaccounted for. He believed that this was due to large escapes resulting from drainage works. They were constantly discovering underneath the surface large chasms, pipes sunk, and gas escaping. Owing to these works, he thought the Company were losing £900 a year, or, if he did not take the selling price of the gas, he would say from £700 to £800 a year. In this, the Company had been very badly hit. They had adopted all means of detecting the leakages, but had not succeeded. With regard to manufacturing operations, a certain quantity of brickwork had been laid for a new inclined retort-house; but the work was not yet completed. He regarded the erection of the inclined retorts as the right policy, as they resulted in a saving in the cost of labour. As he had pointed out, the gas made per ton of coal was 10,146 cubic feet. The total quantity made was 146,521,000 cubic feet, at a cost of 2·48d. per 1000 feet. The quantity made to Midsummer, 1898, was 133,388,000 cubic feet, at a cost of 3·21d. In other words, if they had produced this large amount of gas without the inclined retorts, the wages would have been £1959 instead of £1519; therefore they had an actual saving by the inclined retorts of £440 for the half year, while they were not using anything like the same amount of cannel. Mr. Gibson seconded the motion, and it was carried. The Chairman then brought forward the following resolution: "That this meeting approves of the proposal of the Directors recommending that during the existence of the present high price of coals a dividend less than the maximum dividend shall be distributed among the shareholders." He explained that this was a new departure. The Directors had very carefully considered the matter, and they were unanimously of opinion that, under the exceptional circumstances now existing, it would be politic and right for the shareholders to take a sum less than the maximum dividend. It was being done by companies who were under the sliding-scale; and he wished he might see the principle adopted by the Company, as he thought it was a great premium on good management. He added that the resolution was a declaration of policy, and he thought the step proposed was a wise one to take. If the price of gas was materially increased, they must be hurt by the Electric Light Company. He might say the Directors did not move in the matter without first consulting Mr. Livesey; and he agreed with them that it was a good and proper policy to adopt. Mr. Oke opposed the proposition; saying that if it was carried they should alter the name of the Company to the Cambridge and Town Philanthropic Gaslight Company. Mr. Redfern said the decision was arrived at by the Directors through a desire to be politic in what they did. There was a very strong feeling in the borough against the Company, and they tried to nullify it by what they considered an act of justice. After some discussion, the resolution was withdrawn. A vote of thanks having been accorded to the Chairman and Directors, and Mr. Brown complimented on his management of the works, the Chairman returned thanks. He said the Board had only one object in view—the success of the Company. At the same time they tried to recognize that the Company was a *quasi*-public undertaking, and that there were certain things to be considered besides the maximum dividends.

The 64th half-yearly general meeting of the Chester United Gas Company was held on the 2nd inst.—Mr. J. Gamon in the chair. The Directors reported an available balance of £3623, out of which they recommended the declaration of dividends of 5 and 3½ per cent., which would absorb £3499, and leave a balance of £124 to be carried forward. In moving the adoption of the report, the Chairman stated that, owing to the great outlay which the Company had had to incur in the maintenance and repair of the works, the balance, after payment of the dividends for the half year, would be only £124, instead of £281, as it was in June, 1899, notwithstanding that they had had a very large increase in the output of gas—as much as 6,200,000 cubic feet. It was satisfactory to notice that this was nearly all accounted for by the increase in the city, notwithstanding that the electric light was generally adopted. Having alluded to the advance in the price of coal and other material, he said it had been necessary to increase the manufacturing power of the works, and the Directors had entered into a contract with West's Gas Improvement Company, Limited, for rebuilding the retort-house and retorts throughout. It amounted to £15,000, with extras, which would probably raise the total to £16,000. By this expenditure they would produce 33 per cent. more gas than they were able to do at present. Their unexpended capital stood at £8549. They had in stock, to the credit of this account, £8000, which locked up that portion of it. Besides this, for trading purposes they required a capital nowadays of from £5000 to £6000; so that they had come practically to the end of their capital, and the Directors were contemplating promoting a Bill next session. They would then take the opportunity to ask for powers for the consolidation of the capital, and for making provisions which they considered would be advantageous to the shareholders, and also enable them to secure the cheapening of the gas supply. The report was adopted.

At the meeting of the Coatbridge Gas Company last Thursday, the Directors reported a satisfactory state of affairs; the aggregate consumption of gas having been 53,384,000 cubic feet, or an increase of 9·76 per cent. The gross revenue amounted to £10,244—being a rise of £2165; and the net profit was £2079. The amount chargeable against this for interest is £143; and the remainder, with the addition of the balance of £909 brought forward, makes a sum of £2845 applicable for distribution. During the half year, £1925 was expended on capital account—for extra automatic and ordinary meters, gas-stoves, extensions of pipes, and erecting a new ammonia still. Owing to the continued high price of coal and the increased cost of labour, the Directors have

been compelled to raise the price of gas still further by 2½d. per 1000 cubic feet as from the 1st ult., which makes the charge 2s. 11d. to ordinary, and 3s. 4d. to automatic consumers. The works and plant have been carefully maintained under the supervision of Mr. T. Wilson; and the Directors have no hesitation in saying that when the present scheme of alterations has been completed they will be found to be in a state of efficiency which will serve the requirements of the district adequately for many years. Dividends at the rate of 10 per cent. per annum on the original stock, and 7 per cent. per annum on the new shares (1887 and 1898 issues) respectively, less income-tax, were declared.

The half-yearly meeting of the Derby Gas Company was held last Wednesday—Mr. H. Swingler in the chair. In making his customary statement upon the accounts, the Chairman congratulated the proprietors upon the profit made, notwithstanding the fact that they had been working in adverse times, so far as the price of coal was concerned. In looking back at the prices paid by the Company in the past, he found that for the half year ending June, 1898, it was 10s. 1d. per ton. In December last they paid 11s. 1d.; in June, 13s. 5d.; and now they were paying 16s. When he told them that the coal consumption of the Company was estimated at 60,000 tons per annum, they would see what this increase meant. They had been compelled to call upon the consumers to share their difficulties by paying 3d. per 1000 cubic feet more for the gas supplied to them. Incidentally, he might say that the coal account of the Company for the past half year had increased by £6700. Their capital account had not increased much; but what additions there were, were in a direction which pointed to continued prosperity. They had spent upon their new buildings £265; upon mains, £473; upon new meters, £842; and upon new stoves, £640. The two latter items were very important, because they meant an augmented consumption of gas. With regard to the manufacturing account, he was pleased to say they had again a very satisfactory advance. The increase in the ordinary and public lighting amounted to 27 million cubic feet, or a little over 10 per cent. for the six months. This time last year, it was 7 per cent. In money, it amounted to £3425. The increase in cookers and gas-fires for the half year was more than 200; and there was also an addition of 11 gas-engines. The prepayment meters had increased by 323. With regard to residuals, the Company had had to pay a good deal extra for coal, but they had obtained a considerable additional amount for residuals. For coke, they had received, roundly speaking, £3000 more; for breeze, about £200; and for tar, about £450. In sulphate, there was a slight decrease of about £700—not in consequence of the reduction in price, but because the usual quantity had not been sold. The total increase in residuals amounted to £2916. On the other hand, in carbonizing and various charges connected with it, there was a rise amounting to £5527; but what they had shown for this was 27 million cubic feet more gas. The net balance carried forward, after paying the usual dividend, was £3340. What the position would be in six months' time, he did not know; but, as far as he could make out, it would not be so satisfactory in one way, although it would in another. He could assure the proprietors, however, that the Directors would always endeavour to look after their interests. In conclusion, he moved the adoption of the report and accounts; and the motion was carried unanimously. Dividends at the rates of 10, 7, and 5 per cent. respectively were then declared. The Chairman next referred to the resignation of the Secretary (Mr. R. Fisher), after more than fifty years' service with the Company, and stated that the Directors had decided to recommend to the meeting that he be allowed a life pension of £200 per annum. He had very great pleasure in moving a resolution carrying this proposal into effect. Mr. Jefferson, as the oldest Director, seconded the motion; and it was carried unanimously. The Chairman next referred to the resignation of the Engineer and Manager (Mr. Charles Taylor), and said that although he was not prepared to bring a resolution before the meeting, the Directors had come to the conclusion to allow Mr. Taylor, who had been in the service of the Company for 35 years, and had been a valuable servant, a pension of £250 per annum. He then moved the confirmation of the appointment of Mr. H. Bullivant as Secretary, and Mr. J. Ferguson Bell as Engineer and Manager; and this was agreed to. The proceedings then closed.

The Directors of the Dorchester Gas and Coke Company, Limited, at the half-yearly meeting to-day, will present accounts which show that the revenue in the six months ending June 30 last was £3689, and the expenditure £2628; leaving a balance of £1061. The amount available for distribution was £1175; and the usual dividends were recommended. There was an increase in the quantity of gas sold in the half year.

The half-yearly report of the Directors of the Durham Gas Company recommended a dividend at the rate of 5 per cent. on the original capital and 3½ per cent. on the additional capital. At the meeting of the shareholders last Tuesday, it was stated by the Chairman (Mr. John Coward) that, in consequence of the high price of coal, there had been an extra expenditure of £2200. The report was adopted.

At the half-yearly meeting of the Grantham Gas Company on Tuesday, a dividend at the rate of 10 per cent. per annum was declared on the old shares and 7 per cent. on the new shares. It was stated that, in consequence of the increased cost of coal, the price of gas had been raised 4d. per 1000 cubic feet. Authority was given to issue 4000 ordinary shares of £1 each, under the provisions of the Company's Act of the past session.

The annual report of the Kildwick Parish Gas Company states that the total profits for the past year, including £267 brought from the previous account, are £2626. An interim dividend at the rate of 6 per cent. per annum on the ordinary shares and of 4 per cent. per annum on the preference shares was paid for the half year ended Dec. 31 last. This leaves a balance of £1640, which it is recommended should be disposed of as follows: Dividend on the ordinary shares at the rate of 6 per cent. per annum, £862; dividend on the preference shares at the rate of 4 per cent. per annum, £115; added to reserve fund, £200; balance to next year's account, £463.

Mr. R. Lloyd's speech at the meeting of the Newtown (Mon.) Gas Company last Friday week showed that the Directors regarded the result of the working of the past year as very favourable. The year, he said, had been a prosperous one; and the profits were considerably in advance of any previous year. They amounted to £1728; being an increase upon last year of about £520. Regarding the proposed purchase of the works by the District Council, he said it would be entirely the fault of the Council if they were not able to come to terms; and thereby save the town the expense of an arbitration. The Bill had passed the House of Commons, and received the Royal Assent; but the Company had heard nothing definite from the Council. It was proposed to pay a dividend of 4 per cent. for the half year free of income-tax, which, with the interim dividend declared in February last, made 8 per cent. for the year. After paying this they would have £590 to carry forward. The report and accounts were passed.

At the meeting of the Town and County of Poole Gas and Coke Company, Limited, yesterday, the accounts presented showed a profit of £1140 for the six months ending June 30 last as compared with £1408 for the corresponding period of 1899. The total revenue was £4369; the expenditure, £3229. The Directors state that the difference is more than accounted for by the advance in the price of coal. The available profit, however, enables them to recommend the payment of the full dividends upon the whole of the capital issued.

In their half-yearly report, the Directors of the Whitworth Gas Company say that, owing to the greatly enhanced price of materials, particularly coal, they have been compelled to advance the price of gas. The net profit for the half year was £782. With the amount brought forward, the Directors are enabled to recommend the full dividends of 10 per cent. on the original shares and 7½ per cent. on the new "B" shares. The profit in the corresponding half of last year was £904, and the same dividends were paid. The accounts show that the sale of gas produced £2239 in the six months ending June 30, against £2146 in the first half of 1899. Coal cost £1105, as compared with £867; but residuals produced £520, against £478.

At the half-yearly meeting of the York United Gas Company on the 2nd inst., the report presented by the Directors, which was read by the Engineer and Secretary (Mr. Charles Sellers), showed that the balance of revenue carried to the profit and loss account amounted to £8018. When to this sum was added the balance of interest from the reserve investment fund of £231, it made a total for the past half year of £8249. Of this sum, £190 had been paid for interest on money borrowed on mortgage; leaving £8059 available for distribution. The Directors recommended that the usual dividends be declared of 5s. per share upon the original and 1878 shares, and of 4s. per share upon those created in 1898, free from income-tax. These would absorb £7400. The Directors went on to say that the half year had been favoured by certain coal contracts which the Company fortunately secured before prices advanced, which contracts had not run out. It had also been helped by a very satisfactory increase in the consumption of gas; the increase having been no less than 8 per cent., although competition from the electric light commenced on the 15th of March last. The Directors pointed out that 8 per cent. was much greater than the ordinary increase, as shown by comparison with the past ten years when the electric light did not exist. The average for the last ten June half years was 3·71 per cent., while for the last ten whole years it was 4·01 per cent. The Directors therefore felt that the most timid shareholder need have no fear for his interest in the Company. In addition to the continued growth in the public demands for gas, improved trade had increased the value of residuals. The recent reductions also in the cost of incandescent burners and mantles gave additional assurance to the future of gas; for, regardless of all interested statements to the contrary, the incandescent use of gas was unquestionably the cheapest and pleasantest form of lighting. The Chairman (Mr. J. R. Hill, J.P.), in moving the adoption of the report, said he thought the consumers would join with the shareholders and Directors in expressing gratification at the financial results of the past half year, as they had been achieved without increasing the price of gas. The report was adopted.

Water Companies.

The Cambridge Water Company held their half-yearly meeting on the 3rd inst.—the Master of Corpus Christi College (the Rev. Dr. Perowne) in the chair. The Engineer and Manager reported that water had been laid on to 103 new premises—bringing up to 15,651 the number now supplied; and the Directors in their report recommended dividends at the rates of 10 and 7 per cent. per annum. They also announced that the settlement of the claims arising out of the fraudulent transactions of the late Secretary was nearing completion. The report was adopted.

The shareholders of the Chester Water Company met last Thursday, and received a report which stated that the half-year's accounts showed a surplus of £2875, which, added to the balance from December last (£8224) made a total of £11,099. Of this sum the Directors proposed to transfer to depreciation account £2000 to meet the cost of a new engine now in course of construction to replace an old one; and the interest on preference capital required £450—leaving £8649. Out of this it was recommended that the usual statutory dividends be paid (free of income-tax). These would absorb £1890; and leave £6759 to be carried forward. The report also recorded, with the Directors' great regret, the death of the late Chairman (Mr. W. Brown), and announced the election of the Deputy-Chairman (Mr. F. E. Roberts) to the position. The Company had also during the half year lost the highly-esteemed services of their late Secretary (Mr. E. Lloyd); and the Directors expressed their sense of the loss sustained through this event. Mr. W. S. Moss, who for many years had assisted Mr. Lloyd in his work, has been appointed to the secretaryship. On the motion of the new Chairman, the report and accounts were adopted.

The report of the Directors of the Cleveland Water Company for the half year ending the 30th of June states that, after providing for all expenditure, there remains a balance of £4849, enabling the Directors to recommend that a dividend at the rate of 9½ per cent. per annum on the original and "A" shares, and £6 13s. per cent. per annum on the "B" shares (free of income-tax), be declared; and that £125 be reserved for contingencies. This will absorb £3355, and leave a balance of £1494 to be carried to the credit of the next half-year's account. The dividends for the corresponding period of 1899 were 8½ and £5 19s. per cent.

The half-yearly meeting of the Leatherhead and District Water Company was held last Thursday. Mr. John Boustead occupied the chair, in the absence of the Chairman of the Company. The report stated that the receipts for the half year to June 30 last amounted to £2296, and the working expenses to £1332; leaving a profit of £964. To this had to be added an amount of £883 brought forward from the previous half year, making a total of £1847. Deducting from this sum £161 for interest on

debenture stock, there remained £1686 available for division among the shareholders. Out of this, the Directors recommended a dividend at the rate of 5½ per cent. per annum, which would absorb £888, and leave a balance of £798 to be carried forward to the next account. During the half year, 48 new services had been laid on, and applications for more were still being received. Accompanying the Directors' report was the report of the Engineer of the Company (Mr. F. S. Cripps). In it he said that the water supply during the past six months had been satisfactory, and the quality perfectly pure. A new 6-inch main had been laid from Pachesham to Water Lane, Cobham, alongside the existing 4-inch main. Mr. Cripps adds that, owing to the large increase in the demand for water, it will shortly be necessary to augment the supply by sinking another boring, and connecting it with the present pumping machinery. The Chairman, in moving the adoption of the report, said that in the half year under review the Company had pumped 53,499,000 gallons of water, as against 44,370,000 gallons in the corresponding period of the previous year, or an increase of 9,129,000 gallons. Unfortunately, however, owing to the rise in the cost of fuel, &c., this result had been accompanied by a more than proportionate increase in the expenditure. During the period of excessive drought, the Company had been obliged, in consequence of the great diminution in the amount of water in their reservoir, to suspend for a few nights the supply to the consumers. The 48 new services referred to in the report were estimated to produce an income of £165 a year. At the present time, a system of drainage was being carried out at Leatherhead; and this would necessitate the careful looking after of their mains. Some small extra outlay might thus be incurred; but at the same time the Company were bound to benefit, because a well-drained district was always popular for residential purposes. He thought the shareholders might look forward to enjoying at no distant date their full statutory dividend. In answer to questions, the Chairman admitted that the quantity of water supplied to the consumers worked out to at least 60 gallons per head daily. The report was adopted, and the dividend recommended was declared.

The Directors of the South Hants Water Company state in their report that the accounts for the six months ending June 30 show that the rent-roll during this period increased by £509 13s., and that 458 additional houses were supplied with water. On the profit and loss account there is an approximate available balance of £4105. They propose to pay an interim dividend (free of income-tax) at the rate of 7 per cent. per annum on the 10 per cent. stock, of £4 18s. per cent. per annum on the 7 per cent. stock, and of 3½ per cent. from the 15th of May on the 5 per cent. maximum ordinary shares. The reservoir at Twyford has been completed, and is now available for affording an auxiliary supply by gravitation.

At the meeting of the South Staffordshire Water-Works Company on the 30th inst., the Directors will report that 2176 houses were laid on during the half year ended June 30; making the total number supplied 106,141. The gross amount of water-rates was £54,175, against £51,408 in the corresponding period of the previous year. After providing for interest on debenture and preference stock, the amount remaining for division (including £9723 brought forward) is £25,551; and the Directors recommend the declaration of a dividend for the half year on the ordinary stock at the rate of 6 per cent. per annum, tax free. There will then remain £7701 to the credit of next half year. The Engineer (Mr. H. Ashton Hill, M.Inst.C.E.) reports that the machinery, buildings, and plant of the Company are in substantial order and repair.

The report of the Directors of the Whitby Water Company states that, subject to outstanding liabilities, there is a disposable balance of £1701. Out of this, they recommend dividends for the past half year as follows: On the preference stock already issued, at the rate of 3½ per cent. per annum; on the original shares, 8s. 6d. per share, or at the rate of 8½ per cent. per annum; and on the new shares (1897) 5s. 11½d. per share, or at the rate of £5 19s. per cent. per annum. These payments will, less income-tax, absorb £1169, and leave a credit balance of £532 to be carried forward.

The Yeadon Water Company's balance-sheet for the six months ended June 30 shows a profit on revenue account of £1038. Adding this to the £334 brought forward, the sum available for distribution is £1372. The Directors recommend dividends of 6 and 4½ per cent. respectively on the two classes of stock, which will absorb £1100 and leave £272 to be carried forward. The total outlay on works up to date is £55,511.

In the report which the Directors of the York Water-Works Company submitted at the half-yearly ordinary meeting of shareholders on the 2nd inst., they stated that they were glad to record that the extension of the mains to Towthorpe to supply the military camp at Strensall and the village of Huntingdon with water had been completed, and the water laid on. Having fully considered various schemes for effectively increasing the filtering capacity of the works, they had decided to extend the area at Acomb Landing, so as to obtain an additional quantity of about 1½ million gallons of filtered water per 24 hours. It was anticipated that this increase would make ample provision for all requirements for a number of years. For these and other purposes capital was required; and the Directors asked the shareholders, at the special meeting held immediately after the ordinary meeting, to authorize the raising of a further part of the capital under the Act of 1895, by the creation of 2000 3½ per cent. £10 preference shares. They recommended dividends at the following rates per cent. per annum: On the preference shares, 1876, 5; on the preference shares, 1896, 3½; on the ordinary shares, 10; and on the ordinary shares, 1878 and 1879, 7. These dividends were declared.

Increased Water Storage for Gloucester.—At the last meeting of the Gloucester City Council, the Surveyor submitted a plan for an additional reservoir to be constructed adjoining the existing one at Madam's Wood, in the parish of Newent, on land acquired for the purpose in 1895. He said he proposed that the new reservoir should be constructed of concrete instead of stone, and stated that it would hold about 1,250,000 gallons, which, added to the capacity of the existing reservoir, would provide a total storage of 1,850,000 gallons. He was instructed to prepare contract drawings and a specification of the proposed works, and an estimate of the cost, so that the Corporation may be in a position to invite tenders and apply for sanction to borrow the amount required for carrying out the work.

THE CORPORATION OF LONDON AND THE SOUTH METROPOLITAN GAS BILL.

At the last Meeting before the recess of the Court of Common Council of the City of London, the Streets Committee presented a report on the Bill of the South Metropolitan Gas Company, which received the Royal Assent on the 30th ult. It set forth that, in accordance with the reference to them of the 5th of April, they instructed the Remembrancer (Mr. Prior Goldney) to take the necessary steps to oppose the Bill, with the view of obtaining the insertion of a clause protecting the Corporation from having to pay a higher price for gas supplied to them than is charged to private consumers by any other London Company. It went on to remind the Council that the Bill proposed to authorize the Gaslight and Coke and South Metropolitan Gas Companies to agree for the purchase by the latter Company of the district of supply of the former on the south side of the Thames. On the 31st of May, the Town Clerk directed the attention of the Local Authorities on the northern side of the river to the Bill, requesting them to present petitions to the House of Lords (the Bill having passed the Commons) against the proposed purchase clause, as this, unless the Bill was amended, would have the effect of largely increasing the price of gas to the authorities on the north side beyond the rate fixed by the Amalgamation Scheme of 1883 of the Gaslight and Coke Company and the London Gas Company. The Committee caused to be circulated among the Local Authorities a memorandum prepared by the Remembrancer as to the existing prices for public lighting, and they appointed a Sub Committee to attend the Houses of Parliament during the progress of the Bill. The Remembrancer presented to the Committee a report on the matter which they appended to their own. It showed that the action of the Corporation had resulted in practically all the Local Authorities petitioning against the Bill, most of them appearing by Counsel in support of their petitions, which were practically on the lines of that presented by the Corporation. In the result, the Committee of the House of Lords unanimously rejected the preamble of the portion of the Bill relating to the proposed purchase, without calling any witnesses on behalf of the opponents. In conclusion, the Committee acknowledged the valuable and active assistance rendered by Mr. Alpheus C. Morton, one of the members of the Sub-Committee, in connection with the Corporation's opposition to the Bill. The report was ordered to be printed, and distributed to the members of the Council, as well as to the Local Authorities on the north side of the Thames.

AUSTRALIAN GASLIGHT COMPANY.

Extension of the Company's Mains to North Sydney.

The last anniversary of the Queen's Birthday (May 24) saw the completion of the Australian Gaslight Company's latest extension—viz., from Ryde, *via* the Lane Cove River and Stoney Creek Road, to the rising suburbs of Roseville, Lindfield, Killara, Gordon, Pymble, Turramurra, Wahroonga, Waitaira, and Hornsby, on the north side of Sydney Harbour. The work was longer in hand than was originally contemplated, owing to the delay in the arrival of the necessary pipes from England; but as soon as they were received they were laid. The greatest difficulty was experienced in the crossing of the Lane Cove River, at which point a wooden tresselled bridge had to be erected in which to lay the main. This bridge, however, is only of a temporary nature; the Government having commenced a permanent structure. Arrangements have been made to transfer the main thereto, when it is completed. The extension included the laying of 25 miles of mains and 2 miles of service pipes, and the erection of two governor-houses, with governors—the whole involving an expenditure of upwards of £30,000. The above-named suburbs are very popular, and houses are being built in all directions; so it is anticipated that in a few years they will rival the old, and at present more populous, places on the Western Line. The Australian Gaslight Company now command the whole of the lighting area on both sides of Sydney Harbour, except the portion on the north side supplied by the North Shore Gas Company.

The most pleasing feature in connection with the extension is that the Company have decided to supply the gas at the Sydney rate—viz., 4s. per 1000 cubic feet—which is highly appreciated. At the same time it shows the faith the Company have in the gas-consuming probabilities of their fresh customers. These new suburbs are not yet under municipal control, and this will delay for a time the erection of public lamps; but as the inhabitants are moving in the matter, it is to be hoped that before very long incandescent gas-lights will be installed in the streets, when Sydney will be literally encircled by "the greatest illuminant of modern days." It is a notable and pleasing fact, in connection with the history of the Company, that from the time their works were started on May 24, 1841, nearly every extension has either been commenced or completed on a Queen's Birthday. Whether or not this has been arranged by the officers, it is not for us to say. It is nevertheless a happy coincidence.

GAS COMPANIES AND THE PRICE OF COAL.

The following letter on the above subject, from Mr. George Livesey, in answer to the communication to which reference was made in a paragraph on p. 375 of last week's "JOURNAL," appeared in "The Times" on Thursday:—

The anonymous letter in "The Times," of the 4th inst., from "A North Country Coalowner," was apparently written to lead the "gas-consuming public of London" to believe that the present enormous advance of about 10s. per ton in the price of gas coal is reasonable. He states that during the last thirteen years he has realized on the average "6s. 6d. per ton at the pit," or about 8s. per ton on board ship in the Tyne. This proves nothing to convince the gas consumers that the gas companies are not being unreasonably dealt with. "A Coalowner" must say what profit he makes, and must show that it is not unreasonable, which, I venture to say, he will not do, or the unreasonableness of his contention would be apparent.

In about five of the thirteen years, the price obtained for gas coal was at or under 5s. per ton at the pit, or from 6s. to 6s. 6d. f.o.b. in the Tyne. But even then, when coalowners were complaining that they were working at a loss, our contractors year by year pressed us to take constantly increasing quantities; and two or three years ago, when the price of coal was low, one of the largest Durham coal properties was purchased by a neighbouring owner, whose annual output is now perhaps the highest in the kingdom. It is difficult to reconcile these and other facts with the statement that coal is produced at a loss when prices are low. Nothing will satisfy either gas consumers or coal users but an assurance that the price of coal will shortly be reduced, which important question is completely ignored by your correspondent, though he probably knows, or at least expects, that the boom must soon pass away. The chief cause of the rise—the extraordinary activity of the iron trade—to quote the remark made to me last March by one of the best authorities in the kingdom, "has passed the summit." This is confirmed by "The Times" weekly trade reports, which show, among other indications of falling trade, that orders for new ships are not forthcoming—very few comparatively having been placed this year. Although coal is still in large demand, no difficulty in getting supplies is now reported. Nothing is said about the scarcity of railway trucks, which caused so much difficulty last winter; the supply of engine fuel in Lancashire and the Midlands is beginning to exceed the demand. But the house coal trade is in a very active state, caused by the fear—propagated through various channels, and, strange to say, by a section of the Press, no doubt unintentionally—that unless coal-cellars are filled at what I should say are ironically called "lowest summer prices" they will have to pay much more in the winter, whereas it is quite possible prices may then be lower. At any rate, this excessive demand is met by ample supplies, for there is now no difficulty in getting coal. During the six winter months, from October to March last, gas companies generally had very great difficulty in obtaining the delivery of the coal they had contracted for, and at Christmas stocks at the works were very low indeed; but this is now quite changed—very large stocks being the rule. When making our contracts in the spring, we expected the contractors would fall somewhat into arrear. We therefore arranged for deliveries in excess of our requirements during the summer months. The unexpected has happened. There are no arrears, and we have been put to great inconvenience by the plethora of coal, which has filled our stores to overflowing, and would have enabled us to supply other companies had they wanted coal.

The coal question was referred to by the Right Hon. W. L. Jackson, M.P., when presiding at the meeting of the Great Northern Railway Company last Friday. In the course of his remarks, he alluded to the foregoing letter, which he said appeared to him to be an extremely sensible one. Its instructive point was that the difficulty of Mr. Livesey's Company was not to get coal, but to find means of storing the large quantities which the collieries were delivering under contract. Altogether, it looked as if "top prices" had been reached; and he should be much mistaken if there was not a reduction before long.

SOUTH WALES LOCAL AUTHORITIES AND THE SUPPLY OF ELECTRIC POWER.

The Town Clerk of Cardiff (Mr. J. L. Wheatley) recently submitted to the Parliamentary Committee of the Corporation a detailed report on the South Wales Electrical Power Distribution Bill, which, it may be remembered, was considered by a Select Committee of the House of Commons presided over by Sir James Kitson (see *ante*, pp. 32, 94). The Bill was opposed by the Corporations of Cardiff, Newport, and Swansea, as well as by the Barry District Council. Negotiations were opened between the promoters and the Cardiff Corporation, with the view of arranging terms on which the opposition might be withdrawn; and, after several conferences, a clause was agreed upon to the following effect: "(1) Notwithstanding anything in the Act, the Company shall not, without the consent of the Corporation, under their common seal, raise, sink, or alter the position of, or make any excavation or do any work which would affect the safety of, any water-main or conduit of the Corporation, nor shall the Company lay or place any electric line so as to be within 3 feet of any water-main other than distributing mains or pipes. (2) The Company shall not lay distributing mains in the borough until the Board of Trade have determined that the consent of the Corporation thereto has been unreasonably withheld. (3) The Company shall grant to the Corporation for supply electricity upon terms and conditions as favourable as those granted by the Company to any other company or person. (4) If the Corporation agree with the Company for a supply in bulk sufficient for all reasonable requirements of the borough, the Company shall not be entitled to supply electricity directly or indirectly to any consumer in such district—any difference to be settled by an arbitrator to be appointed by the Board of Trade. (5) In case the Corporation be willing to supply electricity to any person, but be prevented by reason of want of power of access to the premises of such person, the Company shall not be entitled to supply such person unless the Corporation fail within a time which is in the opinion of the Board of Trade reasonable for the purpose to procure the necessary powers to obtain access to the premises. (6) The determination by the Board of Trade that the consent of the Corporation to the Company to supply electricity within the borough has been unreasonably withheld, so as to entitle the Company to supply under the Act, shall apply only to each application or appeal to the Board of Trade, and shall not be deemed to authorize the Company to supply electricity generally in the borough. (7) If any electric line be disused for a space of three months, and such disuse be proved to the Board of Trade, the Board may sanction the removal of such line by the Corporation, and the Corporation may remove the same, and charge the cost thereof, as well as of the re-instatement of any street, or part of a street, to the Company. (8) Notwithstanding anything in the Act contained, the Company shall not supply electricity in Barry except with the consent of the Barry Urban District Council; but such consent shall not be unreasonably withheld."

The promoters also gave to Cardiff, Swansea, Newport, and Barry an undertaking that, in the event of any of these authorities taking a supply of electrical energy in bulk from the Company, they would use their best endeavours to obtain an agreement to give facilities for enabling the authorities, or such of them as take a supply, to receive a fair and reasonable profit in connection with the distribution of the electrical energy. They likewise gave an undertaking to the Barry District Council not to oppose in the next two sessions any application by them for a Provisional Order or Private Act authorizing the generation and supply of electrical energy for the district; and in the event of the Council obtaining such Order or Act, the promoters are not to be entitled to make any claim under the Bill as to the taking over of any supply then given by the Company, except as regards any distributing mains, sub-stations, and junction-boxes which may then be laid by the Company within that district.

The benefits to Cardiff of the joint opposition to the Bill by the four Local Authorities may be summarized as follows: (1) That whereas the Company sought power to supply electrical energy in the borough, the Bill, as amended, provides that they shall not supply it in such districts without the consent of the Corporation, which must, however, not be unreasonably withheld. (2) That the Corporation are amply protected as regards the laying of the mains of the Company in their district. (3) That they are entitled to receive from the Company a supply in bulk. (4) That the charge per unit for the first 400 hours has been reduced from 4d. to 3d. (5) That whereas the Company inserted in their Bill 10 per cent. as the maximum dividend, this had been reduced to 8 per cent., subject only to a sliding-scale in the event of the average price charged falling below the standard price of 2½d. per unit.

ELECTRIC LIGHTING NOTES.

As a considerable portion of the electricity supply area of the Whitechapel District Board of Works is occupied by a Jewish population, the Board have issued particulars of the charge for light, &c., in Yiddish.

To meet increasing demands, the Halifax Corporation have decided to spend £3400 in laying new electric cables. These additions are expected to meet the necessities of the districts covered by them for many years to come.

The Shipley District Council, who have recently entered into arrangements to remove a long-standing grievance of the ratepayers by purchasing the undertaking of the local Gas Company, now propose to establish also an electric light station at a cost of £22,000. There is said to be a good demand for the light; and it is also intended to use electricity for working the tramway lines, pumping at some new sewage works, and furnishing power to the ratepayers for certain purposes. The Council intend to put down two 200-kilowatt dynamos, to give a continuous current at a pressure of from 400 to 500 volts; each dynamo being also fitted to work as a compound machine for traction purposes at from 500 to 560 volts. The distribution is to be on the three-wire continuous current system. The matter was the subject of an inquiry by Colonel Coke, one of the Inspectors of the Local Government Board, on the 3rd inst.; and there was no opposition. Mr. R. C. Quin, the Electrical Engineer to the Council, estimates that the annual income from the works will be £3088, and the expenditure (including £1553 for interest and sinking fund) £2044.

At the monthly meeting of the Sheffield City Council last Wednesday, Alderman Styring said the Electric Light Committee had found the question of leading services into consumers' premises a matter of considerable irritation. Consumers were ready to take the light, but they objected to the cost of connection with the mains. The Engineer had gone very carefully into the matter, and he found that, without making any serious sacrifice, the irritation might be done away with. The Committee therefore recommended a modification of practice which, he was sure, would be very much appreciated. In future consumers would have the service laid in to a distance of 30 feet without any special charge being made. In the cases of premises situated a greater distance away, it was thought reasonable that some charge should be made; and it was proposed that it should be the actual cost price. He wished to give a warning in regard to the capacity of their supply. A week or two ago there was a breakdown in the last-installed machine at the station. This breakdown was of a serious character; and it was just possible that they might be in some difficulty as to keeping up the supply until the alternator, which was now being erected, was completed. If any should occur, he hoped consumers would bear in mind that everything possible was being done.

We have now the result of the inquiries which have been made by the Sudbury (Suffolk) Town Council as to the probable business they are likely to do in electric lighting. They issued 1200 inquiries; and only 250 replies were received. This is a pretty clear indication of the feeling of the ratepayers on the question, and is a justification of the argument that the matter should have been submitted fairly and squarely to the ratepayers. Of the 250, 186, representing 4000 lights, were in favour of the work being carried out by the Corporation, 20 were neutral, and 49 were against. It may be remembered that it was estimated that 6000 private lamps, each consuming 16 units per annum, would have to be connected to make the installation return the modest net profit of £309. Even assuming that the 20 neutrals will become users of the current, the Corporation will only have a promised support equal to about two-thirds of the number of lights required to make the concern a paying one; and there is no certainty that the two-thirds will come up to the requisite consumption of 16 units per lamp. The Electric Light Committee consider the position very satisfactory; but we disagree. If a level-headed business man were proposing to enter into this business on his own account, he would, we venture to think, refuse to sink his capital in it with such a prospect before him. However, the members of the Corporation are not proposing to play with personal money, and so they have light-heartedly decided to proceed with the preparation of plans and specifications, and to make application to the Local Government Board for a loan.

A very grave impeachment of the Cardiff Corporation Electrical Department was made, at the last meeting of the Committee who have control of it, by Mr. Illingworth, the Mains Superintendent. The story of the many troubles at Cardiff in connection with failures has often been told in these columns; but the whole truth has never been revealed. Now we find Mr. Illingworth sending in his resignation; and his Committee were curious to learn the reasons for this step. They therefore invited

him to state them at a recent meeting; and what he then said may have a good effect. Mr. Illingworth recognizes that he has a reputation which may suffer if the lapses of the electric lighting of Cardiff continues; and he has no desire that it shall do so. This he told the Committee; and he went further and informed them of the principal grounds for his fears. An examination of the system had shown him that, in order to prevent future failures, it would be necessary to make many alterations in the distributing-stations, junction-boxes, mains, and low-tension network. The distributing-stations, he alleged, were in a far from good condition, as to equipment and cleanliness; and he felt that, unless something were done immediately, there could not be a proper distribution of electricity. He was also personally aggrieved in connection with several minor matters; and he charged the Deputy Electrical Engineer with undue interference with the work of his department. After a long examination and some discussion, Mr. Illingworth agreed to withdraw his resignation pending a general inquiry which the Committee have decided to hold. From this, may the long-suffering electricity consumers of Cardiff secure relief. If they do, Mr. Illingworth will deserve their thanks for his outspoken criticism of the electrical distribution system and other matters.

At the last meeting of the Court of Common Council of the City of London, the Streets Committee reported that, in pursuance of the resolution of the 22nd of February last, relative to the position of the generating station to be established under the City of London Electric Lighting Order, 1899, on the site at Marsh Gate Lane, Bow, they submitted a plan showing the position of the station, and recommending that it be approved, subject to the following conditions to be embodied in an agreement to be entered into by the Company: "(1) That the purchase-money to be charged against the City undertaking for the portion of the site required for the erection of the City generating station be determined *pro ratâ* to the cost of the whole site. (2) That the Charing Cross and Strand Electricity Supply Corporation shall not acquire any interests in adjoining land without the previous consent of the Corporation being obtained; such consent, however, not to be unreasonably withheld. (3) That the Corporation agrees to allow the Company the necessary running powers over the proposed line of railway shown on the plan submitted, subject to a nominal rental, and without prejudice in any way to the rights of the Corporation to use or alter such line of railway." The Committee also reported relative to a notice received from the Charing Cross and Strand Electricity Supply Corporation, Limited, of their intention to lay mains in the western district of the City, and recommended that the Company be permitted to lay such mains, under the direction and to the satisfaction of the Engineer and Electrical Engineer, subject to the Company complying in every respect with the provisions of the City of London Electric Lighting Order, 1899, and using the subways, where possible, on such conditions as may be arranged, or complying with the proposed Act relating to the laying of public service works in the City of London—it being understood that the Company shall give as long notice as possible of their intention to proceed with each section of the work. It may be remembered that the Corporation petitioned against the Bill of the Charing Cross and Strand Electricity Supply Corporation in Parliament. The Streets Committee submitted a report with a report from the Remembrancer thereupon, stating that the Company, during the progress of the case before a Select Committee of the House of Lords, agreed to the insertion of a clause for protecting the interests of the Corporation.

Last Wednesday, Colonel Smith, R.E., one of the Inspectors of the Local Government Board, held an inquiry at Ryde with respect to the scheme of electric lighting which it is proposed to carry out for the town, and for which the Corporation have applied for power to borrow £30,000. The Town Clerk (Mr. C. G. Vincent) gave evidence in support of the project. He said the borrowing powers of the Corporation under the Public Health Act were £127,814; and there was a margin of £87,689. They were not aware of the existence of this large sum until he investigated the accounts that morning. In cross-examination on behalf of opposing ratepayers, he admitted that up to that morning all loans had been treated as being under the district fund account. A meeting on Sept. 1, 1898, when it was decided by 48 votes to 23 to ask the Corporation to allow a company to do the work, was the last at which the ratepayers had had an opportunity of expressing an opinion. He had received a letter from the Local Government Board, asking that evidence of demand for the light should be placed before the Inspector at the inquiry. The present estimate of £30,098 for the work had never been before the Council, who had at present many other schemes for which they wanted money. About 152 people out of the 600 living in the compulsory area had agreed to take the light, if satisfactory. Mr. J. I. Barton, Chairman of the Electric Lighting Committee, said he did not expect the scheme to return a profit for about four years; but he never had a doubt as to its paying eventually. Mr. F. W. Randall, in support of the opposition, said a petition against the scheme had been signed by 973 people, representing a rateable value of £11,141, or more than half of the total, excluding voids and public institutions. They did not object to electric lighting, but they did not want to take up a more or less speculative concern. The initial expense ought to be borne by a company. He maintained that the scheme would cost more than the estimate. A large number of people had subscribed to the cost of opposing the application; but the Ryde Electric Light Company had no interest in the opposition. The Gas Company did not oppose the electric light, but only the town doing the work. He thought a company were more likely to make it pay than the town. Mr. W. H. Thirkell also opposed on the same grounds, and said the rates were from 6s. 8d. to 7s. in the pound; and they did not wish to have them increased. Mr. Shaw also opposed the scheme, and said the Corporation had only a small majority in their favour. Mr. Hutchinson characterized the opposition as instigated by those who desired to see a company in Ryde. Companies were not generally so philanthropic as to work at a loss; and the Corporation could make the thing pay as well as a company. The Board of Trade granted the Provisional Order without a transfer clause, evidently intending that the Corporation should not be able to depute their powers.

It is reported that the Clayton, Allerton, and Thornton Gas Company have made a further offer to sell their works to the Bradford Corporation. This offer reopens the negotiations on more favourable terms.

HULL CORPORATION WATER SUPPLY.

Starting the New Engines at the Springhead Pumping-Station.

The new engines which have been constructed by the Corporation of Hull, at a cost of about £20,000, at the Springhead pumping-station, were started on the 3rd inst. by Alderman Massey, the Chairman of the Gas and Water Committee, in the presence of the Mayor (Alderman Hall, J.P.), the Deputy-Chairman (Alderman Wharram), the members of the Committee, and the officials. The two old engines, which had long done duty at the station, have been removed and been replaced by two others of the very latest construction, designed and erected by Messrs. James Simpson and Co., Limited. On the arrival of the party, they were met by the officials in charge, and the Engineer (Mr. F. J. Bancroft, B.Sc.) explained the advantages of the latest additions. The new machinery consists of two vertical inverted rotative three-crank triple-expansion surface-condensing receiver engines, each having three pumps driven direct from the piston-rod crossheads by means of rocking beams. They have been designed for a service where the continuity of the supply absolutely depends on constant and efficient working, and where it is highly essential that the engines should be capable of running for long periods with safety and reliability. The main pumps have been located so that they are accessible at all times and at any level of water in the well. The pump-heads and all parts of the engines are convenient for inspection; the whole being above the engine-house floor and in full view. Each engine is capable of raising 3500 gallons of water per minute, and the arrangement of driving the pumps is such as to enable the pump-heads and valves to be readily drawn up from the floor-level without interfering with any part of the engines. The high and intermediate pressure cylinders are jacketed with boiler steam, and the low-pressure cylinder with steam at 60 lbs. per square inch. The cut-off in the high-pressure cylinder is under the control of the governor; and arrangements are made that, should the variation in the speed of the engine rise above or fall below a certain percentage of the mean speed, on account of the main bursting on the one hand or becoming blocked on the other, the cut-off valve would be thrown out of action, completely shutting off the steam; while at the same time a valve on the condenser would be automatically opened, destroying the vacuum. The surface condensers are located above the engine-house floor, and arranged so as to permit of easy accessibility and convenience for inspection both internally and externally. The air-pumps are single-acting, of the Edwards type, driven direct. The method of driving the rocking beams, by which the pumps are worked, enables the engines to be arranged on either side of the well, and not over it; thereby securing accessibility to the pumps, while the engines themselves are removed from each other—so giving ample room for inspection, and obviating the danger of accident while working one engine when the other is under repair. The working barrels and suction-valves are fixed close to the bottom of the well, so as to command the water at the lowest levels. Each engine delivers into a separate 25-inch main, upon which proper non-return valves are fixed, so as to render each set of pumps self-contained. Considerable alterations were made in the boiler-house, from which six of the old boilers were removed, and in their place four Lancashire boilers, 27 feet long and 8 feet in diameter, have been fitted, with flues 3 ft. 2 in. diameter, cross tubes, and superheater fixed in the down-take, together with a Green's economizer. The following are the principal dimensions of the engines and pumps: Diameter of high-pressure cylinder, 17 inches; do. of intermediate-pressure cylinder, 28½ inches; do. of low-pressure cylinder, 43 inches; do. of pump-buckets, 19 inches; do. of pump-plungers, 13½ inches; stroke of engines 48 inches. The new plant has been subjected to the most exhaustive tests by the Engineer, who has presented to his Committee a report furnishing full details of the trials. The engines were specified to be capable of continuous running; and they both ran satisfactorily for a period of eighteen days without stopping—the speed ranging from 10 to as high as 30 revolutions per minute. Mr. Bancroft concludes his report as follows: "Messrs. Simpson's guarantee was for a useful horse power (called a pump horse power) to be developed when running at a total head of 140 feet from 14 lbs. of steam, and when at 200 feet head from 15 lbs. of steam. Under these conditions, the east engine used 13·32 and 13·65 lbs. respectively, and the west engine 13·81 lbs. and 13·76 lbs. respectively. From this the Committee will see that the makers are well within their guarantee—indeed, the steam consumption per indicated horse power and the high mechanical efficiency place these engines high in the list of the most economical pumping-engines yet built." The new engines have been named after the Chairman and Deputy-Chairman of the Committee, by whom they were set in motion. It is satisfactory to find that the whole of the work has been completed without accident, and the removal of the old plant, the erection of the new machinery, and the connections to the leading mains effected without inconvenience or shutting off the town supply.

After a stay of nearly an hour, the party proceeded to the Mill Dam pumping-station, the engines at which were examined. They then assembled in the Board-room, where luncheon was partaken of at the invitation of Alderman Massey, who presided. In proposing "Success to the New Engines," he took the opportunity of expressing the Committee's indebtedness to Mr. Bancroft, not only for the great interest and intelligence he had displayed in effecting the reconstruction of the works at Springhead, but also for his generous zeal for the success, development, and good order of the city's water supply. As a legislative body, what they had to look at was results. The new engines had been tested, and he felt sure they would give every satisfaction. He hoped that, in the future, those gentlemen who constituted the Committee and the Corporation would march with the times and keep ahead, so far as machinery was concerned. He assured the Contractors that if the time came for making further improvements at the works, their tender would receive most careful consideration. If the actual working results of the new engines were what was expected, it would be a matter of extreme satisfaction, for they would be at the top of the tree, not only throughout England, but throughout the world, so far as pumping-stations were concerned. Mr. Wharram responded, and contrasted the present machinery with that which was first used. Mr. Bancroft also replied to the toast. He said it was four years that day since he entered the service of the Corporation. Those years had been very busy ones; but they had been made happy by the attitude of the Committee. Every section of the Water Department had received consideration during

that time. They had laid down mains to East Hull and West Hull, and now complaints of short supply were quite exceptional. The Corporation had 200 miles of mains in use at Hull; and during the recent hot weather 11½ million gallons of water were supplied. This meant that every man, woman, and child had, on an average, 50 gallons of water to use. To put it in another way, it was equivalent to delivering a ton of water at every house in a day. Many towns had to be content with a water supply of half this quantity. They wanted the ratepayers, however, to assist the Corporation in their efforts to stop any waste. As long as Hull increased by 5000 to 6000 people every year, which was equivalent to an extra supply of a million gallons for five years, there would have to be no standing still on the part of the Corporation. If they were going to keep the works up to the requirements of the city, they would have to spend something like £10,000. Mr. Simpson, on behalf of his firm, acknowledged the appreciative remarks which had been made upon their work. The Mayor proposed the "Health of the Chairman," and said the starting of the engines was an important event in the history of Hull, and one upon which the citizens might well congratulate Alderman Massey and all connected with the Water Department. He had been struck by the manner in which the Engineers had adapted themselves to the existing building accommodation; and he thought it was another illustration of how difficulties could be overcome by those who were prepared to face them and do their best. The result of the work was highly satisfactory, both to the Contractors and to Mr. Bancroft. After a few remarks from the Chairman, in response, the proceedings closed.

NOTES FROM SCOTLAND.

From Our Own Correspondent

Saturday.

I have to-night received, per favour of Mr. James Fleming, the Treasurer to the Glasgow Corporation Gas Department, a copy of the print of the report of the Committee on Gas Supply, and their accounts for the past year. The time is short in which to look into the document; but I note a substantial increase of business. Gas sold is greater by 185 million cubic feet than it was in the year 1898-99, in which period there was the abnormal increase of 413 million cubic feet; but last year's increase is greater than that of two years ago, which shows an unbroken normal advance. The revenue also shows a great advance—£70,000—of which over £20,000 is due to increased sales of gas, the price of which remained the same as the preceding year. This is eminently satisfactory, as is also the increased return upon coke (£18,775), and from ammoniacal liquor and tar (£32,347). In this latter connection, a most gratifying feature is the large return per ton of coal carbonized. Liquor and tar are stated at 3s. 5d. per ton, and coke will come to about 2s. per ton, which, together, with coal delivered in the works at a cost of 11s. 5d. per ton, means that about one-half the price of the coal is returned in the shape of residuals. Who is there that does not envy such a result? Coal was up £57,588 in price, upon an increase in the quantity used of 21,844 tons. A larger proportional increase may be looked for when the accounts for the current year come out. Yet the price of gas is only to be raised by 4d. per 1000 cubic feet, which restores it to what it was in 1894-95. A rise of 3d. per 1000 cubic feet in 1891-92 brought in an increased revenue of £46,576. The sales are one-third more than then; so that 4d. should bring in an increased revenue from gas of about £80,000. The extra cost of coal alone is estimated at about £140,000. There would thus remain about £60,000 to be made up from residuals. If last year they added £46,000 to the revenue, there should not be much difficulty this year in their adding £14,000 more. Unfortunately, however, that is not all that is required, because the amount necessary for payment of interest, which last year increased by over £4000, and the amount of contribution to sinking fund, which last year increased by over £1000, will both be proportionally greater. I would not contend that the Corporation are playing for a deficit; but I daresay they can afford to look with equanimity upon the possibility of one. The last deficit they had was in 1891-92; it amounted to £27,116, and was not only wiped out in the succeeding year, but a surplus of £29,539 was realized. Such is the vitality of the undertaking, that a deficit can be at once converted into a surplus, without effort. But that we need not contemplate a deficit is, I think, warranted by the experience of the past few years. For the twelve months dealt with in these accounts, the surplus is £33; in the years preceding, going backwards, the surpluses were respectively, £49, £641, £328, and £502. An undertaking which is managed so as to produce so near results is in the hands of gentlemen who understand their business. They handle a capital of nearly a million-and-a-half sterling, and a revenue of £770,000 a year; and yet, so well balanced is the working of the undertaking that the year closed with only £2108 in the bank, and £3 5s. 3d. in the hands of the Treasurer. Could management go further? The accounts before me furnish material on which an actuarial report upon the conduct of this colossal undertaking might be based. I am unequal to the task. I can only see the end attained, without being able to appreciate the means employed. The capital account, I have no doubt, is a simple document; and this year it is made plainer than ever where the money has been derived, and how it has been applied. But the items are so numerous, and the conditions so different, that time forbids my attempting anything like an analysis of the account. I will go no further than this—that the Corporation have, since 1885, transferred their indebtedness from the form of mortgages to that of Corporation loans—making, thereby, a saving of interest which, at the present time, appears to be ¾ per cent. The effect is seen in this result—that, whereas in 1874, with a capital of £1,016,592, including mortgages amounting to £650,999, the interest paid amounted to £28,556, in the past year, with a capital of £1,408,621, including the Corporation loans amounting to £766,500, the interest paid amounted to £35,581. That is to say, while the capital account has risen by £392,000, the annual charge for interest has only increased by £7000. It is universally acknowledged, I think, that municipal trading receives its highest exposition in Glasgow. I venture to say that the Corporation Gas Department stands first of all. These accounts, therefore, present to us the high-water mark of corporation commercial enterprise. As such they are welcome reading; and the pleasure received in their contemplation is heightened by the fact that year after year there is an advance in the position of the undertaking.

The accounts for the year of the Forfar Gas Corporation have, after some delay, been issued. They show that the year commenced with a balance from the revenue account for the year ending June 15, 1899, of £442; and that the amount of gas-rates for the past twelve months was £5252, or an increase of £160 on the previous year. For residual products the sum received was £930, or an increase of £225. The total revenue was £6624, or an increase of £467. The total expenditure during the year was £6084, leaving £540 of free revenue to meet annuities, the latter amounting to £436. The principal items in the expenditure were: Coals and carriage, £3043; retorts, bricks, and fire-clay goods, £118; furnishings, fittings, tools, &c., £182; meters and repairs, £53; wages, &c., £838; rates and taxes, £98; interest, £318; sinking fund, £270; redemption of £1200 loan, £100; contingent fund, £157; annuities, £442; management, £239; law charges, £5 11s.; arrears, £55. The sinking fund account stands at £1724. Under the heading of the contingent fund, the account shows that during the year £1039 was paid on account of the new gasholder, meter-house, &c., and £124 for coal waggons. The balance at the credit of the fund (standing against the works) is £259. The Auditor appends a statement to the effect that the accounts are correctly put forward and sufficiently vouched. He points out, however, that loans outstanding amount to £10,200, while the statutory borrowing powers are limited to £9000. With reference to the sinking fund, he states: "The requirements of the Act in regard to the sinking fund have not been regularly observed. In the years 1891 to 1897 inclusive, the sum set aside was reduced from the statutory amount of £270 to £150, showing a shortage at the 15th of June last of £840, with interest. The Act of 1871 provides that 'the sinking fund shall be lodged in any of the Banks in Scotland incorporated by Act of Parliament or Royal Charter, or invested in Government securities, or lent out at interest in the name, and at the discretion of, the Corporation, until the same be applied for the purposes specified;' and with reference to the contingent fund, the Corporation are directed 'to invest the moneys so set apart, when the same are not required, in such way and manner as they may deem expedient.' No separate investment of these funds has been made." The Corporation are to meet next week to discuss the accounts. I would merely point out that this is the first year of the new audit, which the Sheriff of the County (Mr. Johnston, Q.C.) appointed; and that it brings out, without any possibility of cavil, that the gas undertaking of the Corporation has been efficiently managed by Mr. Forbes Waddell, the Gas Manager, which is contrary to what some Corporation critics have endeavoured to make out. If the accounts have not been kept upon the best system, that was not the doing of the Manager; and now that the accounts are cast in a more regular form, his critics ought surely to keep silence.

The Town Council of Airdrie have appointed a Committee to re-open negotiations with the Airdrie Gas Company with a view to the transfer of the undertaking. Bailie Walker, on whose motion the Committee were appointed, said it might appear strange that such a motion should be brought forward, seeing they had gone into the subject so recently. In October last, a report upon it by Mr. A. Gillespie, of Glasgow, was laid upon the table. It was Bailie Walker's opinion that they did not give the report proper consideration. He thought the ratepayers were in favour of the transfer. So far as his knowledge and information went, there was not a burgh in which the gas undertaking had been acquired, in which it had not been a complete success in the hands of the corporation. He considered that this was a proper time for them to take over the gas-works, when the burgh was growing and prosperous. Councillor Ewart, on whose motion the subject was formerly brought before the Council, said the purchase sum mentioned in Mr. Gillespie's report took the Committee by surprise. At that time, his apprehension was that the Gas Company were not in a good position financially. In fact, it was quite a common saying that the dividend was in a bad condition. But since then he had seen the balance-sheet of Mr. Gillespie; and from it he gathered that the Gas Company were far from sinking. He thought it was a good paying concern; and he would go nearly the length of the sum mentioned by Mr. Gillespie. As they were all aware, the Gas Company were looking out for an addition to their works. If this addition went on, they would require to raise more capital; and therefore he thought this was an opportune time for investigating what price a willing buyer would give to a willing seller for the undertaking. There was general unanimity in the Council as to the desirability of having the subject reconsidered. This is a very fair opening of the movement, and is in marked contrast to the vapourings about the community having been taken undue advantage of, the gas industry played out, and the like, which are the usual introductions to "friendly conferences" on gas transfers. The Town Council are in a reasonable spirit; and if the Gas Company be equally reasonable, the transfer should be easily effected. Mr. Gillespie's valuation has not been published; but whatever it is, both sides may rely upon its being as fair a valuation as it is possible to make.

The Chief Clerk in the Dumfries Corporation Gas Office (Mr. J. Herries) recently died, after having discharged the duties of his office with great faithfulness for 22 years. Shortly before his death, he executed a will in which he left all his belongings to the Gas Commissioners. The Commissioners have renounced the bequest. In their opinion, it was quite evident that Mr. Herries was not in his common mood. The estate will now go to the sister of the deceased. The Commissioners have certainly acted rightly. Doubtless the bequest was made in a spirit of devotion to the body which Mr. Herries had acquired an affection for—an affection which, in the end, overruled his reason; and this fact being apparent, the Commissioners had no moral claim to the estate.

Within the past ten days the annual congress of the Royal Institute of Public Health was held in Aberdeen, under the presidency of the Earl of Aberdeen. Judging by the congratulatory remarks which were made in the course of the meeting (which lasted for five days), the gathering was a most successful one; but, of course, such utterances are not the standard by which to judge of the value of a meeting. I am not competent to express an opinion as to the scientific worth of the gathering. Speaking as an outsider, what occurs to me is that—as is the case with most of the great scientific bodies—a great amount of self-advertisement was indulged in. Also there were many subjects brought forward which to the lay mind appeared to be trifling. For instance, one paper was on the danger of the practice of passing the Communion Cup promiscuously round in a congregation, on account of the risk of disease being conveyed by it. If there could be said to be a general tone in the

congress, taken as a whole, it was decidedly in the direction of the creation of a Government Department of Public Health, some of the speakers advocating that the head of the Department should be endowed with Cabinet rank. In some of the papers, subjects were dealt with which are of interest to readers of the "JOURNAL." I put first one by Dr. Cowie, of Dufftown, upon the treatment of distillery ale by the biological method. Dufftown is in the Glenlivet district, where so much whisky is manufactured. The growth of the distilling business has been so great that the disposal of the spent ale has become a problem of the first magnitude. When run into rivers in the quantities now handled, the result is the destruction of the healthy water growths and the deposit of a fungus, between which effects fish life is very seriously injured. The Law Courts have been invoked, with a view to having the nuisance removed or abated; and the subject is being dealt with in the customary manner of giving time to remedial measures, to show whether or not they will be effective. Dr. Cowie, dealing with a distillery at Dufftown, which is not the one involved in the litigation, has wrought out a method other than that which is before the Court. He finds that evaporation in settling ponds leaves behind a sludge which is of so sticky a nature that it is scarcely possible to manipulate it. He has, therefore, turned to the biological method; and it is here that the interest to gas producers comes in. He constructs a series of tanks, through which the effluent flows by gravitation. The first tank is filled with coke, and the others with sand. I need not go further into the matter than to say that a crop of microbes is cultivated, and that the action of these is to, as it were, eat up the polluting substances; leaving an outflow of water which is non-injurious to either aquatic vegetation or fishes. Another method of dealing with the same matter, by irrigation, was described to the congress by Dr. Hendrick, of the University of Aberdeen, which does not interest us. There is an offer by the distillers of an award of £2000 for a successful plan of disposing of the refuse of distilleries; and Dr. Cowie seems to have brought out a method which is both successful and cheap. Should it be adopted, there will be a considerable outlet for coke. Mr. Jamieson, the City Analyst of Aberdeen, read a paper on "The Effect of Organic Matter in Water on Health," in which he referred to the danger of organic matter developing in reservoirs, and even in filter-beds, and said that the golden rule was to take water from the running stream.

On the suggestion of Councillor Forsyth, of Glasgow, the Master of Works has been instructed to take two samples of air from a lamp which has been recently erected at Alexandra Parade, with a view to dealing with gas from the sewers. One of the samples is to be of the substance which enters the lamp, and the other of the substance which issues from the lamp. They are to be sent to the Corporation Chemist for analysis; and if it be found that the lamp efficiently deals with the sewer gases, the system, it is said, may be extended.

The County Council of Ayr have recently brought into use a system of water supply for the villages of Barkip and Auchengree, as well as for the County Hospital and other places, which was adopted on the advice of Mr. Patrick Campbell Hart, C.E., of Kilmarnock and Glasgow. A "Victor" windmill is employed to raise the water from a well 100 feet deep; and it is found to be capable of raising, with a moderate wind, 1 million gallons of water per day. There is a storage reservoir of the capacity of 30 million gallons, equal to six days' supply. The plant is working quite satisfactorily.

There are ominous rumours in Greenock as to coming taxation; increase in the rates being freely talked of in respect of most of the public boards. Taking the Police Board alone, it is stated that the slump in Gas Trust finance will cause a levy of 5d. extra per pound. Why, it may be asked, should there be such a sudden and complete reversal of the old order of things at Inchgreen? For many years in succession, until quite recently, the Gas Department yielded a surplus—some years a very handsome one—which was often used to make good nasty gaps in the ledgers of other municipal departments; and at ward meetings it was frequently a hot question with some candidates and ratepayers whether it was right to prop up this and that department with the honest profits of Inchgreen. Certain of the local orators used to say that "every herring should hang by its own tail." This controversy has been completely solved, for the present, at least, by the disappearance of the gas surplus. But why should there be such an alarming increase as 5d. in the pound? If even the rise were 3d. or 4d., the leakage in the accounts must be greater than anyone outside the Police Board has suspected. What is the cause, or what are the causes, of this disagreeable condition of Inchgreen finance? Is dear coal mainly responsible? All over the country the coal question is becoming a most serious one, and in all likelihood the rise in the price of "black diamonds" has much to do with what must be an enormously increased expenditure in the local production of gas. But in some towns the gas-works have not been so heavily handicapped by the enhanced price of coal as others, because foresight and smart business faculty have been brought to bear on the important matter of buying. Has the purchasing of coal for Inchgreen been shrewd and satisfactory? These are questions which will be asked, and will have to be answered before Hallow E'en ushers in the winter. For this financial slump in a municipal department which used to be a fail-me-never, is not the business of the Convener, or the Gas Manager, or the Provost and Magistrates alone, but of every man and woman who pays local rates. Much was said at one time in favour of oil being used instead of coal as the raw material for the production of gas. What of it now? Could it not be got to stand between the community and famine prices at the mines?

The Deficient Water Supply in South-East London.—At a recent meeting of the Lewisham District Board of Works, the Penge and Sydenham and Forest Hill Local Committees brought up numerous complaints as to the failure of the water supply in the portion of the district supplied by the Lambeth Water-Works Company. The Clerk (Mr. E. Wright) stated that a letter had been received from the Secretary of the Company (Mr. H. Wilkins) regretting the slackness of pressure, but not giving any satisfactory reason for it. It was decided to appeal to the Railway and Canal Commissioners, under the Metropolis Water Act, 1897.

GAS AND WATER COMPANIES' STOCK AND SHARE LIST.

Referred to on p. 406.

Issue.	Share	When ex-Dividend.	Dividend or Dividend & Bonus.	NAME.	Closing Prices.	Rise or Fall in Wk.	Y'e'd upon Investment
£			p. c.	GAS COMPANIES.			£ s. d.
590,000	10	Apl. 11	10½	Alliance & Dublin 10 p. c.	18½—19½	+½	5 7 8
100,000	10	,,	7½	Do. 7 p. c.	13—14	..	5 7 2
300,000	100	July 2	5	Australian 5 p. c. Deb.	101—103	..	4 17 1
200,000	5	May 16	6	Bombay, Ltd.	6—6½	..	4 12 4
40,000	5	,,	6	Do. New, £4 paid	4—4½	..	5 6 8
880,000	Stk.	Feb. 23	12	Brentford Consolidated	250—260	..	4 12 4
270,000	,,	,,	9	Do. New	182—187	..	4 16 3
50,000	,,	,,	5	Do. 5 p. c. Pref.	140—145	..	3 9 0
159,375	,,	June 14	4	Do. 4 p. c. Deb.	116—120	..	3 6 8
220,000	Stk.	Mar. 14	11½	Brighton & Hove Orig.	225—235	..	4 17 10
226,320	,,	,,	8½	Do. A. Ord. Stk.	155—165	−2½	5 3 0
1,009,500	Stk.	Feb. 23	5	Bristol, 5 p. c. max.	125—130	..	3 16 11
420,000	20	Mar. 29	10	British	39—41	..	4 17 7
50,000	10	Feb. 23	12	Bromley, Ord. 10 p. c.	24—26	..	4 12 4
79,000	10	,,	9	Do. 7 p. c.	19—21	..	4 5 8
500,000	10	May 16	6	Buenos Ayres (New) Ltd.	8¾—9¼	..	6 9 9
220,000	Stk.	June 14	4	Do. 4 p. c. Deb.	99—101	..	3 19 3
150,000	20	July 12	8½	Cagliari, Ltd.	23—25	..	6 12 0
100,000	10	June 14	8	Cape Town & Dis., Ltd.	13—14	−½	5 14 4
50,000	50	May 2	6	Do. 6 p.c. 1st Mort.	55—57	..	5 5 3
550,000	Stk.	Apl. 11	13½	Commercial Old Stock	270—280	..	4 16 5
236,425	,,	,,	10½	Do. New do.	205—215	..	4 17 8
288,237	,,	June 14	4½	Do. 4½ p. c. Deb.	133—138	..	3 5 5
800,000	Stk.	May 31	9	Continental Union, Ltd.	158—163	+5	5 10 5
200,000	,,	,,	7	Do. 7 p. c. Pref.	170—175	..	4 0 0
51,600	Stk.	Feb. 23	14	Croydon A 10 p. c.	335—340	..	4 2 4
178,400	,,	,,	11	Do. B 7 p. c.	265—270	..	4 1 5
555,000	Stk.	Feb. 23	5½	Crystal Palace Ord. 5 p. c.	110—115	..	4 11 4
60,000	,,	,,	5	Do. 5 p. c. Pref.	130—135	..	3 14 1
486,090	10	July 27	11	European, Ltd.	19—20*	..	5 10 0
354,060	10	,,	11	Do. £7 10s. paid	14—15*	..	5 10 0
14,993,075	Stk.	Feb. 9	4 1/16	Gas-light and Coke	4 p. c. Ord.	97—99	..	4 8 10
2,800,000	,,	,,	3½		3½ p. c. max.	95—97	..	3 12 2
3,799,735	,,	,,	4		4 p. c. Con. Pref.	116—119	..	3 7 3
3,993,975	,,	June 14	3		3 p. c. Con. Deb.	92—95	−2	3 8 2
70,000	10	May 31	8	Hongkong & China, Ltd.		13¾—14½	..	5 10 4
8,800,000	Stk.	May 16	10	Imperial Continental		197—202	..	4 19 0
473,600	Stk.	Feb. 9	3½	Do. 3½ p. c. Deb. Red.		100—102	..	3 8 8
75,000	5	June 14	6	Malta & Medn., Ltd.		4½—5	..	6 0 0
560,000	100	Apl. 2	5	Met. of Melbourne	5 p. c. Deb.	107—110	..	4 10 11
250,000	100	,,	4½		4½ p. c. Deb.	106—108	..	4 3 4
541,920	20	May 31	3½	Monte Video, Ltd.		10¾—11½	..	6 1 8
667,946	Stk.	Feb. 23	9½	Newc'tle & Gatesh'd Con.		215—220	..	4 4 1
299,855	Stk.	June 28	8½	Do. 8½ p. c. Deb.		104—107	..	3 5 5
150,000	5	May 16	8	Oriental, Ltd.		7½—7¾	..	5 3 8
135,000	5	,,	8	Do. New, £4 10s. pd.		6—6½	−½	5 10 10
15,000	5	,,	8	Do. do. 1879, £1 pd.		1½—1¾	..	4 11 5

* Ex. div.

Issue.	Share.	When ex-Dividend.	Dividend or Dividend & Bonus.	NAME.	Closing Prices.	Rise or Fall in Wk.	Yield upon Investment.
£			p. c.	GAS COMPANIES.			£ s. d.
60,000	5	Feb. 23	7	Ottoman, Ltd.	5—5½	..	6 7 3
500,000	100	June 1	6	People's Gas of Chicago 2nd Mtg. Bonds	102—106	..	5 13 2
851,070	10	Apl. 27	7	River Plate Ord.	10—10½	..	6 13 4
250,000	Stk.	June 28	4	Do. 4 p. c. Deb.	100—102	..	3 18 5
250,000	10	Apl. 11	8	San Paulo, Ltd.	11½—12½	..	6 8 0
135,000	Stk.	Mar. 14	10	Sheffield A.	245—247	..	4 1 0
209,053	,,	,,	10	Do. B.	244—246	..	4 1 4
447,427	,,	,,	10	Do. C.	244—246	..	4 1 4
5,641,885	Stk.	Feb. 23	5⅝	South Metrop., 4 p.c. Ord.	126—129	..	4 2 7
1,520,000	,,	July 12	3	Do. 3 p. c. Deb.	94—97	..	3 1 10
380,940	Stk.	May 16	5	Southampton Ord.	115—120	..	4 3 4
70,825	,,	July 12	4	Do. 4 p.c. Deb.	117—122	..	3 5 7
120,000	Stk.	Mar. 14	6	Tottenham and Edmonton A. 5 p.c. B. 3½ p.c. 4 p.c. Deb.	103—108	..	5 11 1
250,520	,,	,,	4½		80—85	..	5 5 11
55,100	,,	June 14	4		111—115	..	3 9 7
182,380	10	Jan. 12	5	Tuscan, Ltd.	7—8	..	6 5 0
149,900	10	July 2	5	Do. 5 p. c. Deb. Red.	98—102	..	4 18 0
				WATER COMPANIES.			
780,401	Stk.	June 28	11	Chelsea, Ord.	285—295	..	3 14 7
150,000	,,	,,	5	Do. 5 p. c. Pref.	155—160	..	3 2 6
160,000	,,	,,	4½	Do. 4½ p. c. Pref. '75	143—148	..	3 0 10
175,785	,,	Mar. 29	4½	Do. 4½ p. c. Deb.	145—150	..	3 0 0
1,720,560	Stk.	Apl. 11	7	East London, Ord.	185—190	..	3 13 8
554,740	,,	June 14	4½	Do. 4½ p. c. Deb.	147—152	+1	2 19 3
390,000	,,	,,	3	Do. 3 p. c. Deb.	96—98	..	3 1 3
700,000	50	June 14	7½	Grand Junction 10 p.c. max. 4 p.c. Deb.	106—109	..	3 8 10
310,000	Stk.	Mar. 29	4		130—135	..	2 19 3
708,000	Stk.	Feb. 23	14	Kent	300—310	..	4 10 4
160,000	,,	,,	7	Do. New, 7 p. c. max.	200—210	..	3 6 8
1,043,800	100	June 28	10½	Lambeth, 10 p. c. max.	275—285	..	3 13 8
406,200	100	,,	8	Do. 7½ p. c. max.	203—208	..	3 16 11
350,000	Stk.	Mar. 29	4	Do. 4 p. c. Deb.	128—132	−1½	3 0 7
500,000	100	Feb. 23	13½	New River, New Shares	415—420	..	3 4 3
1,000,000	Stk.	July 27	4	Do. 4 p. c. Deb.	128—133*	..	3 0 2
902,300	Stk.	June 14	7½	South-wark Ord. 7½ p.c. max. 5 p.c. Pref.	187—192	..	3 18 1
126,500	100	,,	7½		183—187	..	4 0 3
489,200	Stk.	,,	5		155—160	..	3 2 6
1,019,585	,,	Apl. 11	4	Vauxhall 4 p.c. A Deb.	129—134	..	2 19 9
1,155,066	Stk.	June 14	10	West Middlesex	270—275	..	3 12 9
200,000	,,	,,	4½	Do. 4½ p. c. Deb.	140—145	−5	3 2 1
200,000	,,	Mar. 14	8	Do. 8 p. c. Deb.	99—101	..	2 19 5
					*Ex div.		

† Next dividend will be at this rate.

CURRENT SALES OF GAS PRODUCTS.

LIVERPOOL, *Aug.* 11.

Sulphate of Ammonia.—In the early part of the week, there was a fair demand. But this has since slackened; and prices have eased off—the closing quotations being £10 17s. 6d. to £11 per ton. Buying has again been mainly by middlemen. Consumers still maintain a waiting attitude; and this has been rather encouraged by a certain amount of speculative offering for August at a shade under current prices. Production is, however, being absorbed; and there is practically no stock to fall back upon in the event of any exceptional demand arising. In the forward position, quotations are also easier; and sales are reported at £11 5s. per ton, f.o.b. Leith, January-March delivery.

Nitrate of Soda is firm at 8s. 1½d. per cwt. for ordinary, and 8s. 4½d. for fine quality, on spot.

LONDON, *Aug.* 11.

Tar Products.—The increasing demands for benzol is having an effect upon the price, and also upon the anxiety of benzol users to cover their requirements over a more extended period; and though actual advances are not very pronounced, there seems every likelihood of higher prices prevailing later on, notwithstanding the increasing production. Creosote and other oils are flat; and even lower prices are talked of than are at present being obtained. In face of its fuel value, however, it is not likely to recede far below to-day's figures. In pitch, there is little business passing, and still less being shipped. Anthracene shows no change; and prices to a considerable extent are nominal.

Prices may be taken as follows: Tar, 17s. to 26s. Pitch, east coast, 36s. 6d.; west coast, 32s. 6d. Benzol, 90's, 8½d. to 9d., according to position; special qualities for gas, 10d.; 50's, 11d. Toluol, 1s. 2d. Solvent naphtha, 1s. 2d. Crude naphtha, 3½d. Heavy naphtha, 1s. 1d. Creosote, 2d. Heavy oils, 3d. Carbolic acid, 50's, 2s. 3d.; 60's, 2s. 9d. Naphthalene and salts, 50s. to 80s. Anthracene, "A," 4d.; "B," 3d.

Sulphate of Ammonia.—This has dropped from £11 3s. 6d., or thereabouts, to £10 15s. to £10 17s. 6d., at which considerable business has been done.

COAL TRADE REPORTS.

From Our Own Correspondents.

Lancashire Coal Trade.—All that can be reported with regard to the trade of this district is that every description of round coal is moving away freely, with prices exceedingly strong. Though there has been some abatement of the extreme push of orders for house-fire qualities, the restriction of the output, owing to holiday stoppages during the past week, has tended to keep up a pressure for supplies; and collieries generally are still considerably in arrear with deliveries. No difficulty whatever has been experienced in establishing the advance of 1s. 8d. per ton on all new business; the only question being whether this will represent the limit of the upward move, of which there would seem to be some doubt in the event of any very severe winter, and consequent larger demand than usual for house-fire qualities. Steam and forge coals are in active request, with supplies not plentiful, although, if anything, there is not quite the same briskness of demand for shipment. At the pit, prices average 16s. 6d. to 17s. per ton for best Wigan Arley, 15s. 6d. to 16s. for Pemberton four-feet and seconds Arley, 14s. to 14s. 6d. for common house coal, and 12s. 6d. to 13s. for steam and forge coal, with ordinary screened steam coal 15s. 3d. delivered at Mersey ports. Any weakness in the market is confined entirely to engine classes of fuel, supplies of which become rather more plentiful; and though Lancashire collieries are still holding to their basis rates of 10s. 6d. to 11s. and 11s. 6d. per ton at the pit, according to quality, the possibility of some reduction on these figures is now being forced upon them, as supplies from outside districts continue to be pushed here at 9d. to 1s. below local quotations. In many cases consumers are simply keeping themselves going with surplus special lots which are offered from Derbyshire, Staffordshire, and Yorkshire; while the cotton trade outlook is not at all satisfactory, and there is more than a probability of diminished requirements for mill use in the immediate future. For coke there is a continued good demand; and makers of both furnace and foundry qualities are generally holding to recent rates. But the position all through is not quite so strong as it has been; and in some instances coke is now being bought through second hands at considerably under makers' prices.

Northern Coal Trade.—The demand has been fuller, and there has been an increase in the shipments for the last few days; the collieries having been fully working. Best Northumbrian steam coals are now quoted up to 19s. per ton f.o.b.; and even higher prices have been named for odd lots. Second-class steams are about 18s. per ton f.o.b.; and steam smalls are from 11s. 9d. to 12s. In the gas-coal trade, there is still a very limited local consumption. But the exports are heavy; and the shipments to the London Companies have been relatively good of late. One portion of the contract for the gas coal for Stockton has been allotted to the Weardale Coal Company; while other quantities are likely to be taken from collieries in the mid-Durham coalfield. There is no large additional contract for coal now on offer. For occasional sales, best Durham gas coal is quoted at 16s. 6d. to 17s. per ton f.o.b. In the coke trade, the demand is good; and the price is firm at 34s. to 35s. per ton f.o.b. for best Durham coke for export. For blast-furnace coke, the quotation is 29s. at the furnaces. Gas coke shows no alteration in price, or in the extent of the demand.

Scotch Coal Trade.—There cannot be said to be any change; the output continuing good, and the demand strong. Prices are much the same. The quotations for last week were: Main 14s. 6d. to 14s. 9d. per ton f.o.b. Glasgow, ell 16s. to 17s., and splint 16s. to 16s. 6d. The shipments for the week amounted to 229,214 tons—an increase of 60,223 tons upon the preceding week, and of 21,921 tons upon the corresponding week of last year. For the year to date, the total shipments have been 6,200,667 tons—an increase of 1,068,099 tons upon the same period of last year.

The Northam Urban District Council decided on Thursday to increase the salary of Mr. Thornton, who is acting as Resident Engineer of the water-works in course of construction, from £200 to £300 a year.

C. & W. WALKER, LTD.,

Midland Iron-Works, Donnington, nr. Newport, Shropshire.

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Proposed Extensions at the Tipton Gas-Works.—Colonel C. H. Luard, one of the Local Government Board Inspectors, recently attended at the Public Offices, Tipton, for the purpose of holding an inquiry relative to the application of the District Council for sanction to borrow £2000 for gas-works purposes. Among those present were Mr. J. W. Waring (Clerk), Mr. H. O. Timmins (Manager), Mr. V. Hughes (late Manager), and Mr. T. Crew (Chairman of the Council). The Clerk stated that they required the money for the purchase of additional land adjoining the works for extensions, for a new station-meter, and for legal and incidental expenses.

The Discontinuance of Public Lighting in the Summer Months.—In a pay-bill of considerably over £1200—one of the largest amounts which the Bishop Auckland Town Council have had to sanction the payment of at one time—the modest sum of 8s. 1d. represents the outlay on street lighting in that town for the month of July. Commenting on this circumstance, the "Northern Echo" says: "If it were not for the fact that in these so-called summer months the nights are often of densest darkness, there would exist every reason for feeling fairly satisfied with the saving that is annually exercised by not lighting the street-lamps in the summer months. But there are dangers attending such a course; and with the police the total absence of lighted lamps is a standing grievance, handicapping them as it does in the performance of their duty. In impenetrable darkness, it is easy for the wrong-doer to evade notice; and property and person alike are endangered."

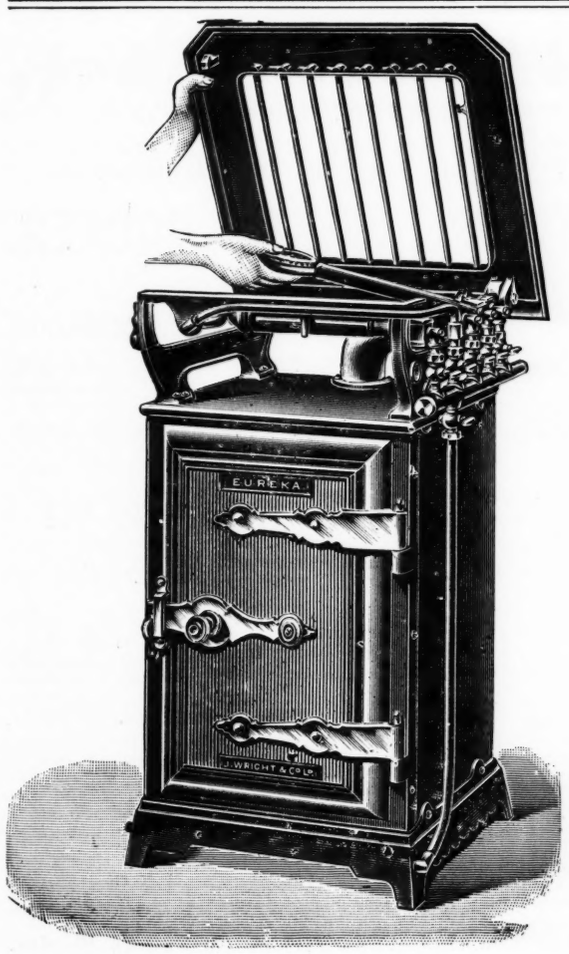
Mr. T. Burt on the Export of Coal.—In the course of his monthly circular to the Northumberland miners, Mr. Thomas Burt, M.P., says: "A vigorous agitation for checking or for entirely prohibiting the export of coal has been going on for a few months past. Influential newspapers have advocated the project, motions to call attention have appeared on the order-book of the House of Commons, and numerous questions have been put to Ministers suggesting legislation on the lines indicated. Any serious interference with the export of coal, would certainly injuriously affect Northumberland, South Wales, and other exporting mining districts. Probably no part of the country would be more severely hit than our own county, since we depend on foreign demand for so large a proportion of our trade. Nothing but the strongest, the most overwhelming reasons in the general interest of the nation, or of the Empire, could justify the infliction of this loss, injury, and suffering upon localities. No such overwhelming reasons have been advanced. General and permanent prohibition of the export of coal may be dismissed as utterly chimerical; but a narrowed issue, though not an unimportant one, has been raised in a practical form. The Government have introduced a Bill for prohibiting the exportation of arms. In that Bill coal is not specifically mentioned; but the questions and answers in the House of Commons show it is included. . . . If it is necessary, in the general interest, to prohibit the exportation of arms and ammunition it may conceivably be equally necessary to prohibit the export of coal. But the responsibility to determining when and where the prohibition should be exercised demands judgment and discrimination—qualities which, as we have recently seen, even Governments do not always possess and exhibit. The subject will require to be carefully watched."

Sales of Shares.—At a sale by auction last Thursday, at Chapel-en-le-Frith, 45 shares in the local Water Company were sold at £1 each. Messrs. Bruton, Knowles, and Co., of Gloucester, recently disposed of some original £10 shares in the Stroud Gas Company for £23 to £23 15s. each; and £5 ordinary shares in the same Company for £8 2s. 6d. to £8 9s. each.

The Falmouth Corporation and the Gas-Works.—Another attempt was made last week to induce the Falmouth Corporation to take action with a view to the acquisition of the gas-works. At a meeting on Thursday, Mr. C. Rusden proposed that an expert should be appointed to value the gas undertaking, which he said was a valuable concern that the Corporation ought to acquire. Two or three members, who briefly spoke on the subject, expressed the opinion that the time is inopportune for further action with regard to the gas-works, and the motion not being seconded fell through.

The Wages of Bradford Gas-Works Employees.—At the meeting of the Bradford Corporation Gas Committtee last Friday, the chief business under consideration was an application from the men employed at the gas-works for an all-round increase of wages. It was computed that, if the demands asked for were granted, it would mean the extra payment of salaries amounting in the aggregate to £3700 per annum. Most of the workmen concerned are members of the Gas Workers and General Labourers' Union, by whose authority the application is made. The greatest increase is asked for by the meter inspectors, who demand an advance from 22s. to 24s. per week, and a further advance of 1s. per week every year until a maximum of 32s. is reached. The question was adjourned in order that a deputation representing the workmen may attend before the Committee.

The Local Government Board and New Water-Works for Sudbury (Suffolk).—There has been some correspondence between the Local Government Board and the Sudbury Town Council with reference to a proposal to borrow £2000 for additional water-supply works. The Board wrote that they were advised that, as a general rule, water-mains should be laid at a depth of not less than 3 feet, measuring from the top of the pipes to the surface of the ground, and that this depth should be allowed wherever possible in the present instance. Where, however, the mains proposed to be laid were to be connected at both ends with existing mains, and the depth in question could not be attained, the best cover available should be given; care being taken to avoid any depression in which deposit might take place. The Board desired to be informed whether the Town Council were prepared to comply with this suggestion. The Board also asked whether the Council had definitely decided to proceed at once with the construction of the shaft and underground storage reservoir in the event of the loan being sanctioned. At the meeting of the Council on Tuesday, the Clerk stated that he had replied that they would do all in their power to carry out the Board's suggestions as to the water-mains. He had also mentioned that, so long as the present supply of water continued, there would be no necessity for constructing a storage reservoir; but the Council desired to be in a position to build one at any time, should the supply show signs of failing.



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New Borrowing Powers for the Hartlepool Gas and Water Company.—At a special meeting of this Company last Thursday, the Directors were empowered to borrow £16,500 required for extensions.

Oil-Lamp Accidents.—In London last year, 22 persons lost their lives as the result of lamp accidents—a number which compares favourably with previous years. The death-roll from 1890 to the end of March last reaches the formidable figure of 276.

The Costs of the Derwent Valley Water Act.—The Town Clerk of Sheffield (Mr. H. Sayer) has reported to the Water Committee that the costs of the Sheffield Corporation in connection with the Derwent Valley Water Bills of 1899 have been taxed and allowed at £22,912; and he was instructed to apply to the Derwent Valley Water Board for repayment of this amount, in accordance with the provisions of the Act.

Experience of a Gas Engineer's Son as a Prisoner of War.—During the progress of the war in South Africa, the papers all over the country have contained many interesting letters from officers and men engaged in the campaign, which have done much to dispel the glamour with which it was at the outset surrounded. They have presented to us a "round unvarnished tale" of suffering and privation bravely endured in defence of the country's honour, and have furnished innumerable examples of that extraordinary pluck which has ever been, and it is to be hoped ever will be, a characteristic of the British race. An extract from one of these letters appeared in last Wednesday's "Daily News;" and it calls for notice in our columns from the fact that the writer was Mr. Douglas Colson, son of Mr. Alfred Colson, the respected Gas and Electrical Engineer of the Leicester Corporation. Mr. Douglas Colson, who is in the Royal Engineers, was taken prisoner by the Boers acting under De Wet, on the 14th of June, and he furnishes a remarkable narrative of his experiences. On the day prior to his capture, he was employed with others in making good three bridges which had been damaged by the enemy. In the evening he and eleven other electrical engineers turned in to sleep on the open veldt; but about 2.30 the following morning they were all awakened by heavy rifle fire. He jumped up, and to his astonishment found that the reconstruction train by which they had travelled had disappeared, and with it all their rifles! The bullets were flying round them like hailstones. The men were taken prisoners, and were marched off to join a convoy where they found about 700 English troops who had been captured at Roodeval. After being in the hands of the enemy till the 5th of July, they were taken to the border and liberated, by order of President Steyn; not, however, before they had been asked to sign a parole, which to a man they refused to do. While on the Ladysmith Road, they halted one day at noon for a meal; and as they were taking it (such as it was), they saw galloping over the hill towards them a mounted man, who turned out to be a British soldier with his rifle. Mr. Colson confesses that he almost cried with joy at once more seeing one of our own troopers. They were directed to a farm which was in sight, where, to their delight, they found luscious food, and coffee with sugar in it. He says it was "a meal never to be forgotten—biscuits and bully beef!" That night they reached the village of Upper Tugela, where they slept under cover for the first time for 22 nights. It is true they were in prison cells; but they were welcome enough.

Gas and Electric Light Shareholders and Membership of Local Authorities.—The Melton Mowbray District Council recently applied to the Leicestershire County Council for an order dispensing with the prohibition against certain members voting on any question in which the Gas and Electric Light Companies were interested, they being shareholders in these Companies. The Finance and General Purposes Committee last Wednesday recommended the Council to accede to the application, and to affix the seal of the Council to four copies of the necessary order. This was done.

A Dutch Water Company.—"La Dechnologie Sanitaire" recently gave some particulars of the working of the Dunes Water Company, of Leyden, in the past year. In 1899, the pumps at the station on the Rhine raised 1,060,247 cubic metres of water (1 cubic metre = 220 gallons), against 1,031,666 cubic metres in 1898—being an average of 2905 cubic metres per diem, against 2829 cubic metres in 1898. The consumption of coal was 754,066 kilos. The subsiding reservoirs with coke filter-beds and the sand filters worked perfectly. The number of consumers on Jan. 1, 1899, was 6294; and on Jan. 1, 1900, 6427—an addition of 133. Water is supplied by meter to 115 consumers and under 18 contracts. The meters fixed in works and other establishments registered a consumption of 154,589 cubic metres, which gives for the remaining consumption 905,658 cubic metres, including water for roads, fire extinction, and leakage. There are 54,406 metres of pipes in the service. For industrial and other important establishments, 651 meters are in use. The receipts last year were 111,984 florins, which allowed of a dividend of 8½ per cent.; the portion belonging to the town being 31,500 florins.

The Proposed Acquisition of the Heckmondwike Gas-Works by the Local Authorities.—Last Wednesday, a meeting of owners and ratepayers of Liversedge was held at the Public Hall to consider a resolution adopted by the District Council authorizing them to proceed, jointly with the Heckmondwike Council, to promote a Bill in Parliament enabling them to acquire the undertaking of the Heckmondwike Gas Company, who supply gas over the greater part of the two townships. There was only a small attendance. Mr. Kellett, the Chairman of the Liversedge Council, proposed the adoption of the resolution. It was stated that the Directors of the Company had said they were not anxious to sell the undertaking, and had refused to name any price; and the Council did not think it prudent to suggest any figure, as the matter might eventually have to go to arbitration. For the same reason they could not give any statistics to show that the undertaking could be worked profitably for the ratepayers. Thereupon Mr. Metcalf moved, and Mr. Longey seconded, the adjournment of the meeting until some information could be given. A discussion ensued, in the course of which Mr. H. Heaton and others submitted that it was not fair to ask the ratepayers to sanction such an enterprise without evidence that advantage was likely to result; while others contended that the meeting should have confidence in the Council, and give them the power they asked. Only three persons voted for the amendment, and about a dozen for the motion, which was therefore declared carried. It was stated during the discussion that the paid-up capital of the Company is £42,000.

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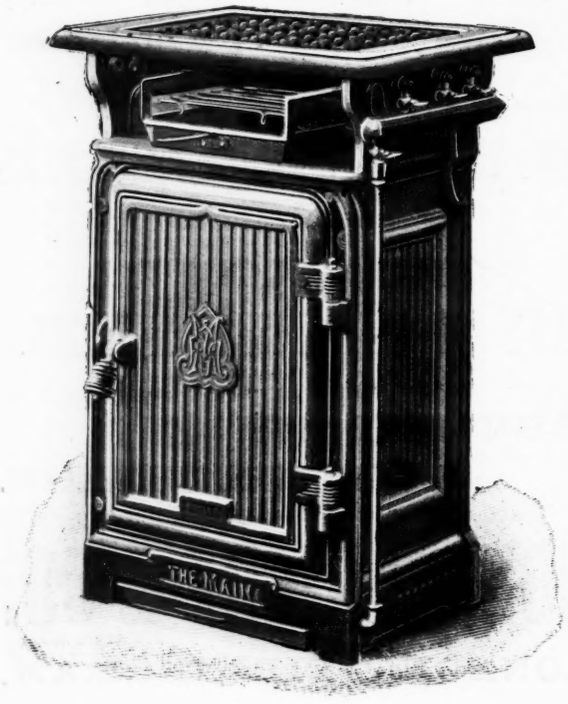

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Enamelled Door Plate and Loose White Enamelled Crown, extra.

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Full Particulars and Special Quotations on Application.

A Money-Lending Gas Engineer.—A meeting of the creditors of Thomas Stormonth, jun., described as a money-lender and gas engineer, was held at Exeter, last Thursday. Debtor's statement of affairs showed liabilities amounting to between £500 and £600, and assets, including £1000 invested in two money-lending firms, amounting to £1034. He said he had filed his petition in order that his estate might be protected against an execution, and also that an account might be taken of a partnership which was found by a Jury in a recent action to exist between him and a person named Fisher. The Official Receiver, in his observations, states that the debtor commenced business as a money-lender in January, 1896, and that an action has been instituted in the High Court to prevent him dealing with the assets of the partnership in that business. The public examination was adjourned in order that the Trustee might have an opportunity of going into the accounts.

Proposed Extension of the Tamworth Water-Works.—A special meeting of the Tamworth and District Joint Water Committee was held a short time since to consider the report of the Manager (Mr. H. J. Clarson) as to the proposed extension of the works. According to the report, the present reservoir has a capacity of 750,000 gallons, but it rarely contains more than 400,000 gallons; being just over a day's supply in ordinary weather, and about three-quarters of a day's supply in times of drought and frost. Mr. Clarson recommends the construction of a new reservoir, with a capacity of 500,000 gallons; the erection in the present well of two new pumps and one engine, which will increase the pumping power by 50 per cent.; and the building of a new engine-house. There is sufficient boiler power for another engine. The new works will, he says, be sufficient for the next thirty years, and will take at least eighteen months to complete; the approximate cost being £7500. Several members remarked that the Committee were running a great risk in depending on only two engines, and thought this part of the work should be proceeded with first. Eventually it was decided that the Manager should prepare a detailed scheme for extending the works.

Increased Water Storage for Oldham.—The members of the Oldham Corporation made their annual inspection of the water-works on Monday, the 30th ult.; and at the same time Mr. Griffiths, Vice-Chairman of the Water Committee, formally opened the Rooden reservoir by unlocking the door of the valve-house, the Mayor (Mr. J. Hood) opened the valve and turned on the water, and Mr. A. Ashworth, the Chairman, unveiled a tablet commemorating the event. The completion of the scheme exhausts the powers obtained by the Corporation for the construction of works. The first turf was cut on July 30, 1894. The reservoir has a top water area of 21 acres, is at an elevation of 1068 feet above Ordnance datum, and has a capacity of 265 million gallons. The natural gathering-ground is only 25 acres; but it is augmented by collecting the flood waters from 370 acres from the Wenshaw Valley and 423 acres from the Piethorn Valley—making a total of 818 acres. The whole of the works have been designed by Mr. G. H. Hill, M.Inst.C.E.; the Resident Engineers being Mr. W. Watts (at present Engineer at the Little Don Valley works of the Sheffield Corporation), during the first portion, and Mr. C. J. Battey, the present Manager, subsequently.

Heavy Leakage at St. Ives, Cornwall.—A report presented to the St. Ives Town Council on Wednesday last stated that the leakage of gas during the quarter had been 25 per cent. Mr. J. Daniel, Chairman of the Gas Committee, said there was no doubt that the loss had been as heavy for some time. The Mayor remarked that, now they knew the real position, they must find out where the leakage occurred. As against the serious loss of gas, they were glad to find that the make per ton of coal had increased from 7000 or 8000 to about 10,000 cubic feet.

Another Pronouncement on Water Gas.—At the recent meeting of the British Medical Association at Ipswich, a paper was read by Mr. J. C. M'Walter, of Dublin, on "The Hygienic Aspect of the Use of Water Gas." He pointed out that the increasing use of water gas by gas companies was a source of distinct danger to the consumers. The leakage from the mains, escapes from house fittings, and the occasional omission to turn off the taps, were sources of great danger. The introduction of a considerable admixture of water gas with coal gas in towns had been followed by an immediate, enormous, and proportionate increase in the number of deaths ascribed to carbon monoxide poisoning. He was strongly of opinion that the proportion of this constituent in the gas should be shown by the official gas testers, and that legislative measures should be adopted to prevent gas companies from mixing, without warning, any proportion of water gas with the coal gas they supplied. Dr. Thresh said the public generally were ignorant of the fact that serious changes in the manufacture of gas had been made, and that they were now being supplied with a more dangerous substance than formerly. If there was the slightest escape of gas in the house, the plumber should be called in at once, and the matter remedied. It should be known generally that no escape of gas was too trivial to be attended to.

The Trowbridge Acetylene Light Syndicate Cease Operations.—After having incurred liabilities amounting to upwards of £120,000, the Acetylene Light Syndicate, Trowbridge, has ceased work; and recently, on an application made by Mr. G. Palmer (the Chairman), who had advanced the Company £2500 on debentures, the principal and interest of which are overdue, a Receiver and Manager was appointed. A general meeting of shareholders was held on the 27th ult., at Trowbridge, under the presidency of Mr. Palmer, at which Mr. T. Ponting, solicitor, of Warminster, explained that Mr. F. R. Ravenhill, of that town, had been appointed Receiver and Manager. The debenture-holders were in the position of holding a mortgage over the whole of the assets of the Company, and no one could levy a distress or execution. The Chairman attributed much of the failure of the Company to their being unable to manufacture carbide at a profit, and to the new engine not working satisfactorily. A question as to whether the Company had, during their existence, made and sold 5s. worth of carbide elicited a reply from the Chairman that he thought considerably more than this had been disposed of, and that the quality was very good. It having been pointed out that no general meeting of shareholders had been held since June, 1891, Mr. Ponting, in reply to a question, said he did not think it was necessary to submit any resolution. The business was in the hands of the Receiver, and the Directors would, if they received a good offer, apply to the Court for permission to sell. The proceedings then terminated.

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WINDSOR ST. WORKS, BIRMINGHAM	2,000,000
SALTLEY WORKS, BIRMINGHAM	2,000,000
COLCHESTER	300,000
BIRKENHEAD	2,250,000
SWINDON (New Swindon Gas Co.)	120,000
SALTLEY, BIRMINGHAM (Second Contract)	2,000,000
WINDSOR ST., BIRMINGHAM (Second Cont.)	2,000,000
HALIFAX	1,000,000
TORONTO	250,000
OTTAWA	250,000
LINDSAY (Remodelled)	125,000
MONTREAL	500,000
TORONTO (Second Contract; Remodelled)	2,000,000
BELLEVILLE	250,000
OTTAWA (Second Contract)	250,000
BRANTFORD (Remodelled)	200,000
ST. CATHERINES (Remodelled)	250,000
KINGSTON, PA..	125,000
PETERBOROUGH, ONT.	250,000
WILKESBARRE, PA..	750,000
ST. CATHERINES (Second Contract)	250,000
BUFFALO, N.Y..	2,000,000
WINNIPEG, MAN.	500,000
COLCHESTER (Second Contract)	300,000
YORK	750,000
ROCHESTER	500,000
KINGSTON, ONT.,	300,000
CRYSTAL PALACE DISTRICT	2,000,000
DULUTH, MINN.	300,000
CATERHAM	150,000
LEICESTER	2,000,000
ENSCHEDE (HOLLAND)	150,000
BUENOS AYRES (RIVER PLATE CO.)	700,000
BURNLEY	1,500,000
KINGSTON-ON-THAMES	1,750,000
ACCRINGTON	500,000
TONBRIDGE	300,000
STRETFORD	500,000
OLDBURY	300,000
TODMORDEN	500,000
SALTLEY, BIRMINGHAM (Third Contract)	2,000,000
YORK (Second Contract)	750,000
ROCHESTER (Second Contract)	500,000
NEWPORT (MON.)	250,000

A Decline in Coal Consumption in Belgium.—Writing last Friday, "Engineering" said: "The information which reaches us this week from the Continental centres is of considerable importance. Consumption of coal is showing a tendency to decline in Belgium. The stoppage of rolling-mills for one or two days per week is a first cause of the contraction of the demand. The glass-works have also been consuming smaller quantities of coal for some time past; and some of these latter works have even closed altogether. A number of other Belgian industries are also suffering from the high price of coal, and their managers are talking of suspending operations in consequence. The deliveries of coal in July from the three principal German coal-producing districts—the Ruhr, the Garre, and Silesia—were 2,905,230 tons, as compared with 2,978,620 tons in July, 1899."

The Gandy Belt Manufacturing Company, Limited, announce the opening of a branch in Ireland, at No. 40, Donegall Street, Belfast.

The first annual Ironmongery and Hardware Trades Exhibition and Market, which will comprise gas-stoves and other appliances, will be held at the Agricultural Hall, Islington, from the 15th to the 25th inst.

The salary of Mr. C. H. Priestley, the Water Engineer of Cardiff, has been raised by the Corporation Water Committee to £550 per annum. Mr. Priestley is the President this year of the British Association of Water-Works Engineers.

At the last meeting of the Evesham Town Council, a recommendation of the Gas Committee that the Council should enter into a three years' engagement with the Manager (Mr. Percy H. Fletcher) at an increased salary of £200, was adopted.

The result of a dispute between the Milton and Sittingbourne District Councils as to the cutting off by the latter of the supply of water to the former, has led to the Milton Council agreeing to hand over their Keycol Hill works to Sittingbourne for the sum of £6000.

John Spencer, Limited, of the Globe Tube and Engineering Works, Wednesbury, and of Great St. Thomas Apostle, London, have just issued a new and revised edition (the 20th) of their price list of specialities in iron and steel tubes, valves, fittings, pipe-joints, and other appliances. It is of convenient size for the pocket; and at the end of the list there are blank pages for memoranda.

The Secretary of State for Foreign Affairs has received a despatch from Her Majesty's Ambassador at Madrid, stating that tenders are invited by the Corporation of Palma (Balearic Isles), not later than the 12th of September, for lighting the town by means of gas. Such particulars as have been received may be examined at the Commercial Department of the Foreign Office any day between 11 a.m. and 5 p.m.

The employees at the Ryde Gas-Works were recently entertained at dinner by the Engineer and Manager (Mr. F. F. Farrand), in commemoration of the marriage of his daughter with Mr. Charles Levett, of Brockley, Kent. Among the presents were a drawing-room clock, by the Directors; a case of silver-mounted carvers, by the employees; and a drawing-room work-table and a silver-mounted salad-bowl by members of the staff.

Messrs. Richmond and Co., Limited, gave all the employees at their Bournemouth branch an outing on Saturday, the 4th inst. The party, which numbered about 50, proceeded by the steamship *Monarch* to Weymouth, which they reached just before noon. A substantial dinner was provided, at which Mr. E. W. T. Richmond presided. Mr. A. W. Evans, the Manager of the Bournemouth branch, proposed "The Firm," coupled with the names of the Chairman and Mr. H. M. Thornton, the London Manager; and the toast was enthusiastically received.

The report of the Directors of the Leeds Fire-Clay Company, Limited, for the twelve months ending June last, states that, after charging £8000 for interest on debentures to June 30, the divisable profit, including £11,733 brought forward, amounts to £82,125. Deducting interim dividends paid on the preference and ordinary shares, there remains a balance of £54,125, less 3 per cent. for six months' interest on the preference shares paid on the 1st of July; leaving £36,125. The Directors propose to pay a dividend on the ordinary shares at 4½ per cent., to place to the reserve fund No. 2 £2500, and to carry forward £15,623.

MM. Solvay et Cie., of Brussels, have issued an illustrated descriptive pamphlet on the subject of their coke-ovens. Since the introduction of these ovens in 1882, they have been largely adopted; something like 1451 having been constructed—10 at the Halifax (Nova Scotia) Gas-Works—and 357 being in course of erection. A folding plate gives a plan and transverse and longitudinal sections of the oven, and diagrams show the proportion of products obtainable by the distillation of 100 kilos. of coal, having different degrees of moisture. The great advantage of recovering these products is seen from a diagram giving the value in francs of those formerly lost. The pamphlet is very well got up.

During the past month, Messrs. Richmond and Co., Limited, have been holding an exhibition at the Loraine Hall, Newcastle-on-Tyne. Cookery lectures have been given twice each day by Miss Lillie Richmond, and in connection therewith the Company organized last Wednesday a cookery competition for school children—three valuable and suitable prizes being offered. About a dozen of the leading schools sent competitors. The idea, so far as Newcastle was concerned, was distinctly novel, and excited great interest; the hall being crowded on the evening of the competition. The preparatory work was performed on a long raised table; and the cooking was done in two gas-stoves on a still higher platform. As the competitors all the time faced the audience, all the details of the work could be seen and criticized. Much excitement was evinced by the spectators, and capital work was done by the competitors—so much so that, although Miss Richmond had apparently little difficulty in awarding the first three prizes—viz., to Miss Johnson, Miss Kennedy, and Miss Thackrae—yet the work of the others was so commendable that she felt called upon to confer upon several a mark of favour, and certain of the unsuccessful competitors received, as a consolation prize, a "Richmond" Cookery Book, with an autograph note from the authoress. From an outsider's point of view, it was interesting to notice the high state to which the children's cookery education, and their use of gas-stoves, had been brought; while it was amusing to see the amazement and interest of their elders, to whom their doings were evidently a revelation as to the facility and usefulness of these stoves.

NOTICE TO ADVERTISERS.—COPY FOR ADVERTISEMENTS for the "JOURNAL" should be received at the Office *not later* than TWELVE O'CLOCK NOON ON MONDAY, to ensure insertion in the following day's issue.

Orders for Alterations in, or Stoppages of, PERMANENT ADVERTISEMENTS should be received not later than the FIRST POST on SATURDAY.

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Twice as Rich as Bog Ore.
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[For Illustrated Advertisement, see Aug. 7, p. 382.]

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TRAVELLER, with old and extensive connection among Gas Companies, is open to REPRESENT a Firm of Fire-Clay Retort and Brick Manufacturers and General Gas Plant Contractors.
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WANTED, a Position as Clerk of Works, ASSISTANT or ENGINEER and MANAGER of Gas or Water Works. Twelve Years' Experience. Have served articles under a Civil Engineer. Shortly disengaged.
Reply to No. 3543, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

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Apply to R. DEMPSTER AND SONS, LTD., ELLAND.

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Apply to the MANAGER, Gas-Works, WALTON-ON-THAMES.

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WANTED, a reliable Man as Stoker. One used to Gas-Engine and Exhauster preferred.
Further Particulars on application to J. H. LYON, Manager, Gas-Works, PETERSFIELD.

WANTED, a Second-hand Scrubber, with 10-inch Inlet and Outlet and Bye-Pass Valves and Connections. Must be in good condition, and ready for immediate re-erection.
Full Particulars and Prices to GEO. MEAD ROBINS, Sutton, SURREY.

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Apply, by letter, to No. 3536, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

WANTED, additional Meter Inspectors, by a Gas Company in the South of England. Must be competent Men, of good address, accustomed to both Ordinary and Prepayment Meters, and able to fix the same or execute ordinary Repairs.
Apply, by letter, giving Age, Experience, and Wages desired, to No. 3541, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

WANTED, by a large Provincial Gas and Water Company for their Fitting and Mains Department, a FOREMAN. He must be a Plumber, and have a knowledge of both Gas and Water Fitting, and be competent to superintend Workmen and Main Laying. Liberal Wages to a satisfactory Man.
Apply, by letter, with Testimonials, and stating Wages required, to No. 3542, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

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BALE & CO.'S Oxide of uniform quality. SPECIAL FIRE CEMENT, OXIDE PAINTS, OILS, SULPHURIC ACID, &c.
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WANTED, immediately, a couple of steady STOKERS for Shovel Charging. Used to Engine and Exhauster. Constant employment to steady Men. Wages 28s. per week, and one week's Holiday per year.
Apply to G. ROBINSON, Gas Manager, BRECON.

WANTED, a thoroughly reliable and steady Man as LEADING STOKER. Must be a good Shovel Charger, and used to Engine and Exhauster
For further Particulars apply to H. C. SHEPHERD, Manager and Secretary, Gas-Works, Old Swindon, WILTS.

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WANTED, a good Man as Head Fitter and OUTDOOR INSPECTOR, who must also be capable of taking charge of the Stores with the assistance of a Boy Clerk. Good Wages to an experienced Man.
Apply, stating full Particulars of career, to G. HELPS, Gas-Works, NUNEATON.

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WANTED, a Working Manager for small Gas-Works about 30 miles from London. Must be a good Carbonizer, and able to do Repairs, Fitting, &c. Present make 3 millions; shortly to be increased. Wages to commence 27s. per week, House, Garden, Coal, and Gas.
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Commencing Salary, 25s. per week, with prospect of ultimate advancement to the position of Inspector.
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Salary £300 sterling per annum. Horse allowance, House, Fuel, and Gas free, and first-class passage out and home.
Applications, by letter, stating Age, and accompanied by *copies* of Testimonials, to be addressed to the SECRETARY OF THE COMPANY, 6, Drapers' Gardens, LONDON, E.C., and sent in on or before the 22nd of August.

ENGINES and Exhausters combined "Waller," to pass 30,000 cubic feet per hour. DITTO to pass 7000 feet per hour, overhauled and complete. Cheap to clear. Also BOILERS.
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GASHOLDER, 50 ft. by 20 ft., with Six Columns, 15 inches diameter, Wrought Lattice Girders, &c., complete and perfect. About Fourteen Years old.
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J. FIRTH BLAKELEY AND CO., Gas Engineers, DEWSBURY.

CONTRACT FOR TAR AND SULPHATE OF AMMONIA.

THE Inverness Gas Commissioners are prepared to receive OFFERS for TAR and SULPHATE OF AMMONIA produced at their Works up to the 15th of May, 1901.
Particulars may be had by applying to the Manager at the Gas-Works.
Tenders, endorsed and addressed to Kenneth Macdonald, Esq., Clerk to the Commissioners, will be received up to Monday, the 27th inst.
Gas-Works, Inverness,
Aug. 4, 1900.

COUNTY BOROUGH OF SALFORD.
(GAS DEPARTMENT.)

OXIDE OF IRON.

THE Gas Committee are prepared to receive TENDERS for the supply of 1000 Tons of OXIDE OF IRON PURIFYING MATERIAL.
Full Particulars may be obtained on application to the Gas Engineer, Gas Offices, Bloom Street, Salford.
Sealed Tenders, endorsed "Oxide of Iron," addressed to the Chairman of the Gas Committee, Town Hall, Salford, to be delivered to me not later than Three p.m. on Thursday, Aug. 23, 1900.
The Committee do not bind themselves to accept the lowest or any Tender.
L. C. EVANS,
Town Clerk.
Town Hall, Salford.

COUNTY BOROUGH OF SALFORD.
(GAS DEPARTMENT.)

SPENT OXIDE.

THE Gas Committee invite Tenders for the purchase of about 250 Tons of SPENT OXIDE.
Full Particulars may be obtained on application to the Gas Engineer, Gas Offices, Bloom Street, Salford.
Sealed Tenders, endorsed "Spent Oxide," addressed to the Chairman of the Gas Committee, Town Hall, Salford, to be delivered to me not later than Three p.m. on Thursday, Aug. 23, 1900.
The Committee do not bind themselves to accept the highest or any Tender.
L. C. EVANS,
Town Clerk.
Town Hall, Salford.

BOROUGH OF EAST RETFORD.
(WATER UNDERTAKING.)

THE Committee of the above invite TENDERS for the SINKING of an additional WELL and BOREHOLE, and the EXCAVATING of ADITS on the Site of the present Works.
The Plans may be seen on or after the 15th inst.; and Copies of the Specification and Forms of Tender may be obtained from the Engineer. A Deposit of One Guinea will be required, which will be returned on receipt of a *bonâ-fide* Tender, and the return of the Specification.
Sealed Tenders to be delivered to the undersigned on or before Sept. 1, 1900, endorsed "Tender for Water-Works Extensions."
The Committee do not bind themselves to accept the lowest or any Tender.
J. B. FENWICK,
Engineer.
Gas and Water Offices,
Retford, Aug. 9, 1900.

SALES BY AUCTION OF GAS AND WATER STOCKS AND SHARES.

MR. ALFRED RICHARDS begs to notify that his AUCTIONS of STOCKS and SHARES in London, Suburban, and Provincial Gas and Water Companies are held PERIODICALLY, at the Mart, Tokenhouse Yard, E.C.
He also undertakes the issuing by AUCTION of GAS and WATER STOCKS and SHARES under Parliamentary Powers.
Terms for issuing such Capital, and also for including Gas and Water Stocks and Shares in these periodical Sales, can be obtained on application at Mr. ALFRED RICHARDS' OFFICES, 18, FINSBURY CIRCUS, E.C.

CLACTON URBAN DISTRICT COUNCIL.

THE above Council invite Tenders for the supply and delivery of 1250 Tons of best screened GAS COAL at Clacton-on-Sea, in quantities as may be required during the ensuing Twelve Months.
Particulars and Form of Tender may be obtained, upon application, from the Engineer and Manager, Mr. Sydney Francis, Town Hall, Clacton-on-Sea.
Tenders, sealed and endorsed "Tender for Coal," to be delivered to the undersigned not later than Four p.m. on Monday, Aug. 20 next.
The Council do not bind themselves to accept the lowest or any Tender.
GEO. T. LEWIS,
Clerk to the Council.
Town Hall, Clacton-on-Sea,
Aug. 9, 1900.

CLACTON URBAN DISTRICT COUNCIL GAS-WORKS.

CONTRACT No. 4.

THE Gas and Water Committee of the above Council are prepared to receive TENDERS for the Manufacture and Erection of CAST-IRON PURIFIERS 16 feet square by 5 feet deep, with Steel Covers, Lifting Apparatus, and Connections.
Copies of the Specification, Form of Tender, and Drawings may be obtained from the Engineer, Mr. Sydney Francis, Town Hall, Clacton-on-Sea, Essex, on payment of One Guinea, which will be returned on receipt of a *bonâ-fide* Tender.
Sealed Tenders, endorsed "Tender for Purifiers," to be delivered to the undersigned not later than Four p.m., on Monday, Aug. 20, 1900.
The Committee do not bind themselves to accept the lowest or any Tender.
GEO. T. LEWIS,
Clerk.
Town Hall Buildings, Clacton-on-Sea,
Essex, Aug. 2, 1900.

CLACTON URBAN DISTRICT COUNCIL GAS-WORKS.

CONTRACT No. 5.

THE Gas and Water Committee of the above Council are prepared to receive TENDERS for the Manufacture and Erection of a MECHANICAL SCRUBBER and TAR EXTRACTOR, together with connections, &c.
Copies of the Specification, Form of Tender, and Drawings may be obtained from the Engineer, Mr. Sydney Francis, Town Hall, Clacton-on-Sea, Essex, on payment of One Guinea, which will be returned on receipt of a *bonâ-fide* Tender.
Sealed Tenders, endorsed "Tender for Scrubber," to be delivered to the undersigned not later than Four p.m., on Monday, Aug. 20, 1900.
The Committee do not bind themselves to accept the lowest or any Tender.
GEO. T. LEWIS,
Clerk.
Town Hall Buildings, Clacton-on-Sea,
Essex, Aug. 2, 1900.

CLACTON URBAN DISTRICT COUNCIL GAS-WORKS.

CONTRACT No. 6.

THE Gas and Water Committee of the above Council are prepared to receive TENDERS for the Manufacture and Erection of a complete SULPHATE of AMMONIA PLANT on the Continuous principle.
Copies of the Specification, Form of Tender, and Drawings may be obtained from the Engineer, Mr. Sydney Francis, Town Hall, Clacton-on-Sea, Essex, on payment of One Guinea, which will be returned on receipt of a *bonâ-fide* Tender.
Sealed Tenders, endorsed "Tender for Sulphate Plant," to be delivered to the undersigned not later than Four p.m., on Monday, Aug. 20, 1900.
The Committee do not bind themselves to accept the lowest or any Tender.
GEO. T. LEWIS,
Clerk.
Town Hall Buildings, Clacton-on-Sea,
Essex, Aug. 2, 1900.

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WITH A PREFACE BY
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MITCHAM AND WIMBLEDON DISTRICT GASLIGHT COMPANY.
(INCORPORATED BY ACT OF PARLIAMENT, 1867.)

NOTICE is Hereby Given, that the SIXTY-SEVENTH ORDINARY HALF-YEARLY GENERAL MEETING of the Shareholders of this Company will be held in the Board-Room, at the Works, Mitcham, in the County of Surrey, on Tuesday, the 28th day of August, 1900, at Three o'clock in the Afternoon precisely, to receive the Report of the Directors and a Statement of the Accounts for the Half Year ended the 30th day of June last, to declare a Dividend, and for General Business.
The TRANSFER BOOKS WILL BE CLOSED from the 13th inst. until after the Meeting.
By order,
BENJAMIN GREEN,
Secretary and Manager.
Offices and Works: Western Road,
Mitcham, August, 1900.

TOTTENHAM AND EDMONTON GASLIGHT AND COKE COMPANY.

NOTICE is Hereby Given, that the ANNUAL ORDINARY GENERAL MEETING of the Proprietors of this Company will be held at the Company's Offices, Willoughby Lane, Tottenham, on Saturday, the 25th day of August inst., at Twelve o'clock at Noon precisely, in order to receive the Report of the Directors and Statement of Accounts for the Half Year ended the 30th of June, 1900; to declare a Dividend for the same period, and for the election of Two Directors and an Auditor for the ensuing year; to consider the Notice of Motion given at the Meeting held on the 24th of February last—viz., "That at the Annual General Meeting to be held on the 25th of August next, it be resolved that the Half-Yearly Meetings of the Proprietors be held in the months of February and August, the day and hour to be fixed by the Directors;" and for the transaction of General Business.
The TRANSFER BOOKS will be closed for the Consolidated Stocks from the 10th to the 27th of August inst., both days inclusive.
By order of the Board,
JAMES RANDALL,
Secretary.
Offices of the Company:
Willoughby Lane, Tottenham,
Aug. 3, 1900.

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Yield of Gas per Ton	10,500 Cub. Ft.
Illuminating Power	16·9 Candles.
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Best Gas Coal and Cannel, giving High Illuminating Power, Large Yield per ton, and reasonable in Price.

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Illuminating Power 16 7/10 Stand. Sperm Candl.
Coke (of good & pure quality) 13¾ Cwt. per Ton.
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Ash . . . . . Under 1 per Cent.
Tar . . . . . 163 lbs. (Avoir.) per Ton.
Ammoniacal Liquor 103 lbs. (Avoir.) per Ton.

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PELTON GAS COALS.

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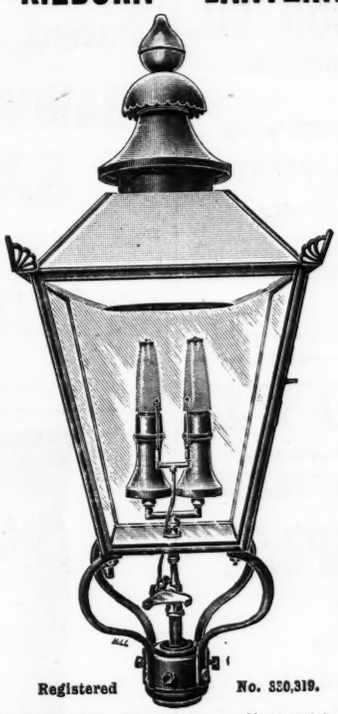

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Yield of Gas 11,000 cubic feet per Ton of Coal as per Analysis by
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Yield of Gas per ton . . . . 13,155 cub. ft.
Illuminating Power . . . . 38·22 candles.
Coke per ton . . . . . 1,301·83 lbs.

EAST PONTOP GAS COAL.

Yield of Gas per ton . . . . 10,500 cub. ft.
Illuminating Power . . . . 17·8 candles.
Coke . . . . . 70 per cent.

SOUTH PELAW MAIN GAS COAL.

Yield of Gas per ton . . . . 10,500 cub. ft.
Illuminating Power . . . . 16·3 candles.
Coke . . . . . 73·1 per cent.

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JAMES MILNE & SON, LTD.,
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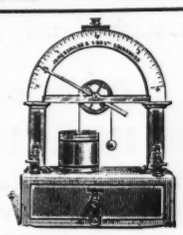

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Yield of Gas per Ton.	10,500	Cubic Feet.
Illuminating Power	16·9	Candles.
Coke	66·7	Coke.
Sulphur	0·86	Sulphur.
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As per Analysis by
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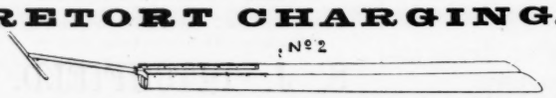
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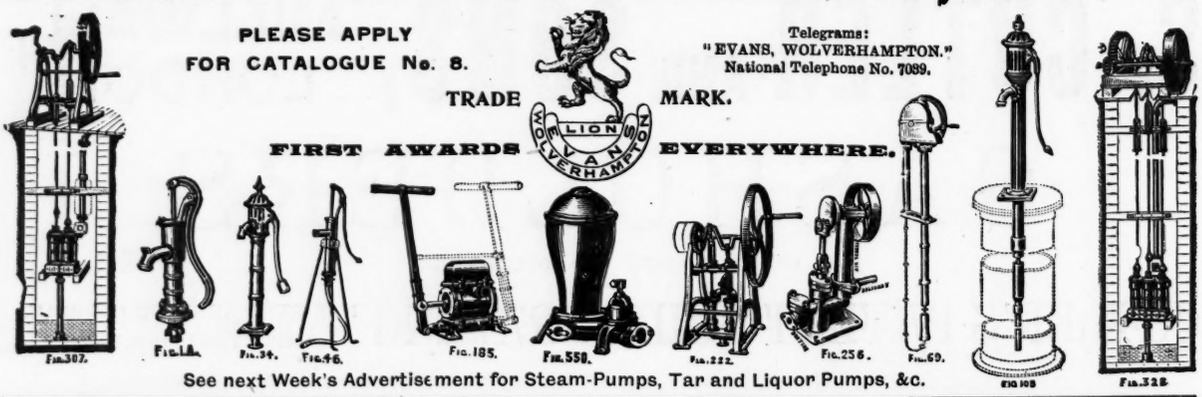

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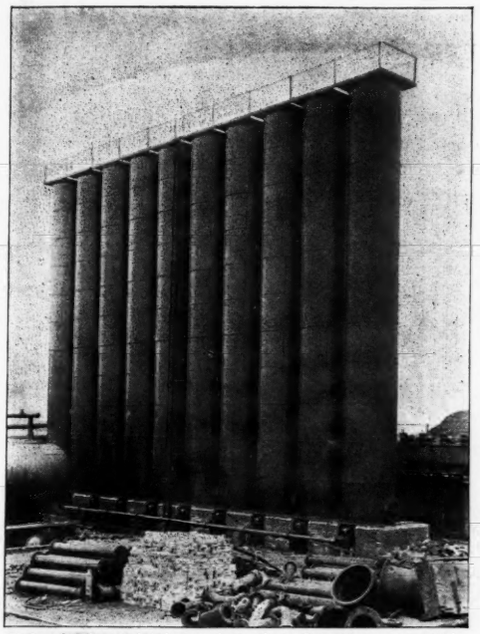

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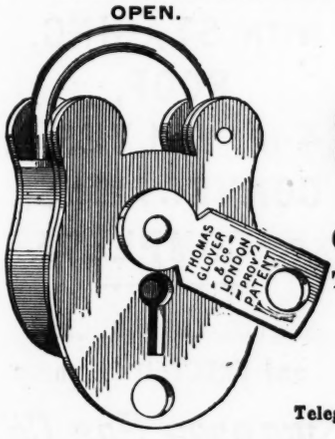

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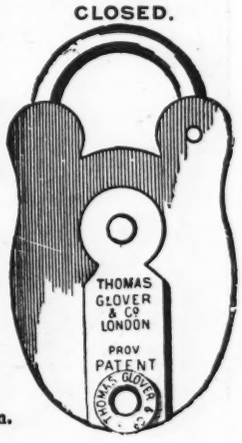

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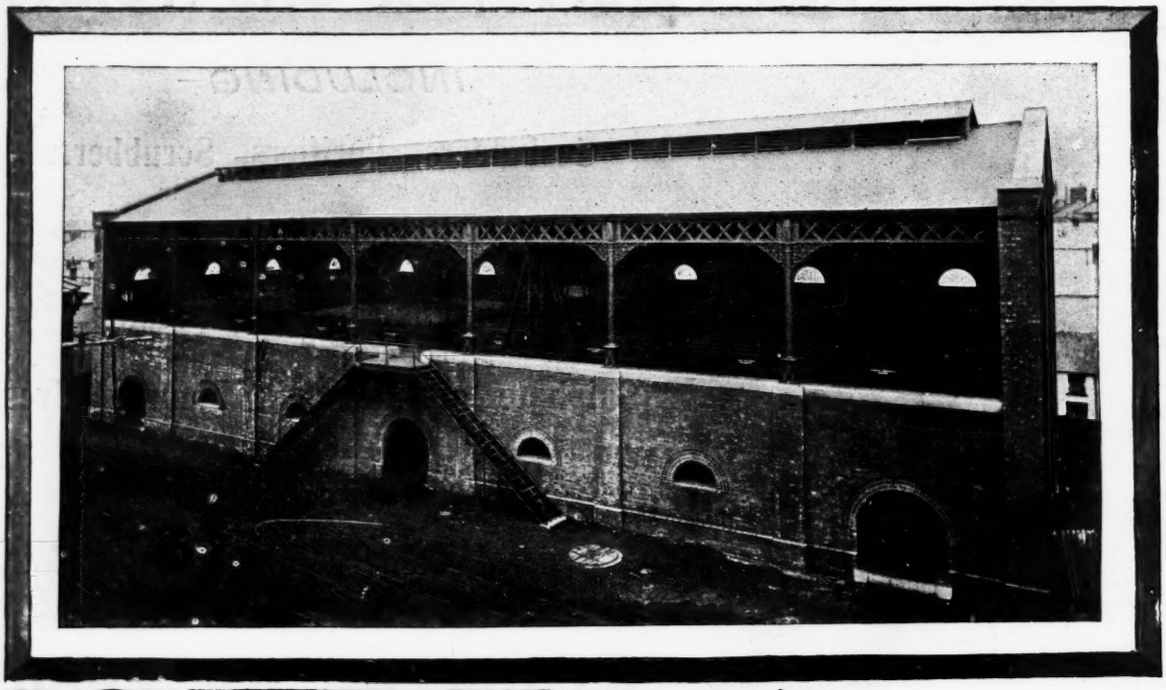

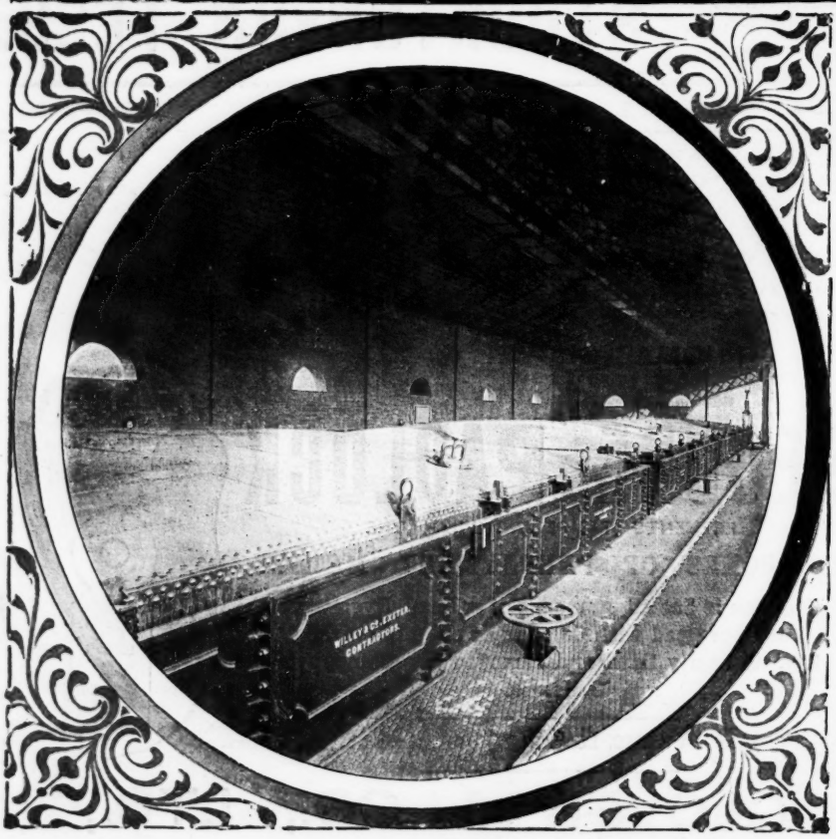

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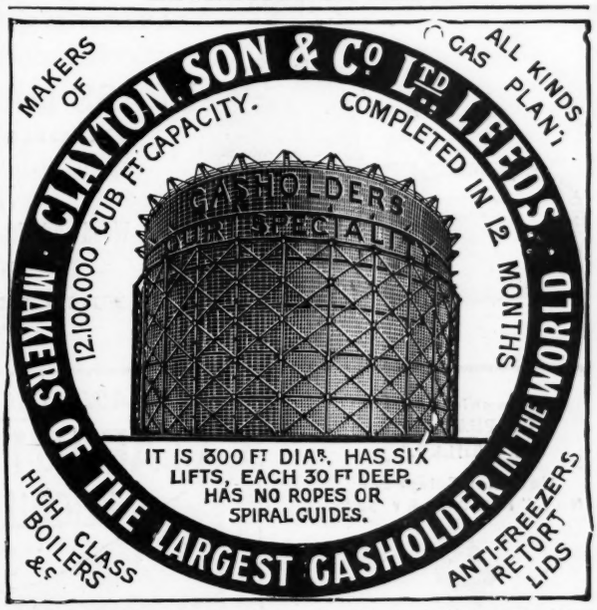
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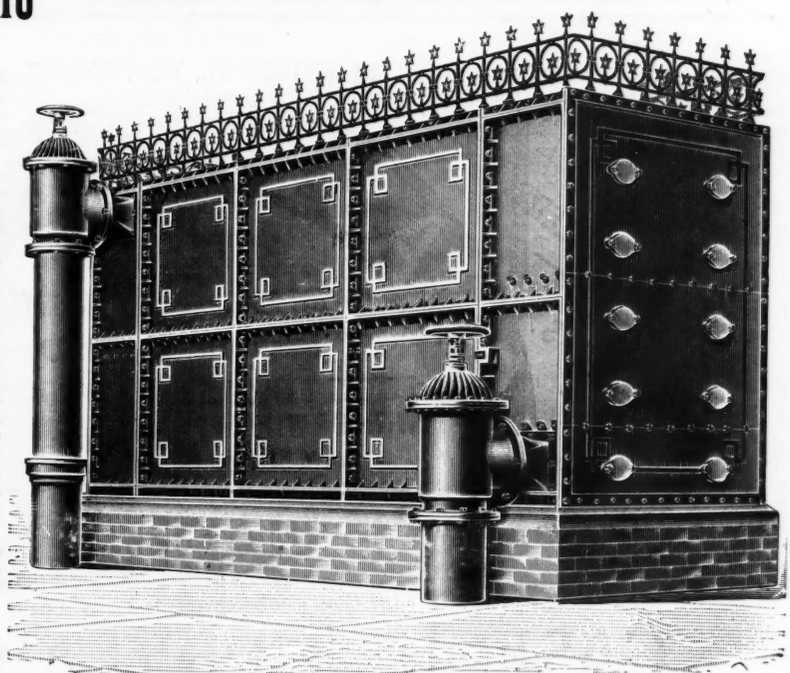

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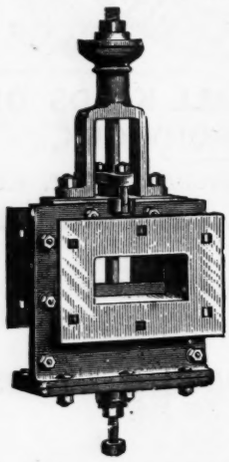

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